SOUTHERN NEVADA WATER AUTHORITY

STATE OF NEVADA

COLORADO RIVER COMMISSION OF NEVADA

March 2, 2026

Via email
c/o crbpost2026@usbr.gov

Bureau of Reclamation
ATTN: Ms. Carly Jerla
BCOO-1000
P.O. Box 61470
Boulder City, NV 89006

Re: State of Nevada's Comments on the Colorado River Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead Draft Environmental Impact Statement

Dear Bureau of Reclamation and Ms. Jerla:

A top priority for Nevada is developing the next set of operating guidelines for the Colorado River. As you know, the current guidelines governing the operations of Lake Powell and Lake Mead only govern the system through the end of September 2026, and the process of formulating new guidelines for implementation is underway. This effort, including the associated National Environmental Policy Act (NEPA) process, is crucial to the future management of the Colorado River system and fundamental to the future health and vitality of the Southwestern United States.

This letter and its accompanying attachments contain the State of Nevada's comments on the Bureau of Reclamation's Draft Environmental Impact Statement on the Colorado River Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead (DEIS). But first, we need to make plain the context framing many of our comments. Our water users have sacrificed in the face of the worst Colorado River hydrology on record. Since the onset of drought in 2002, they have reduced their overall Colorado River water consumption by more than 40 percent even as our population grew by more than 875,000 people. And they, unlike so many others, have not ignored the reality facing the basin by making the flimsy argument that our economy cannot prosper while water consumption decreases. Simply put, any alternative evaluated or rule set adopted by Reclamation that fails to sufficiently credit their sacrifice is not acceptable.

Of particular concern is the DEIS's complete omission of compliance with the 1922 Colorado River Compact (the "Compact"), the foundation of the Law of the River, as a basis for the formulation and evaluation of alternatives in the DEIS, and as a basis for evaluating and disclosing the likely environmental consequences of those alternatives. Ignoring the Compact's requirements for deliveries to the Lower Basin States of Arizona, California, and Nevada in times of shortage is not a convenience at Reclamation's disposal when the Colorado River Basin has been mired in the driest period on record for more than 25 years. Yet every single alternative evaluated in the DEIS is presented as if the Compact, approved by each of the Basin States, Congress, and the President of the United States, was written in sand that disappeared long ago.

Additionally, the DEIS seeks to set the direction for future Colorado River operations while failing to consider and carry forward the Lower Basin States Alternative in the NEPA analysis. By cherry picking specific components of that alternative, Reclamation disregarded the integrity and benefits of the comprehensive proposal submitted by the Lower Basin States. And this choice, together with failing to present any Compact-compliant alternative, led Reclamation to ignore wholesale the environmental and social impacts likely to occur in the Upper Division States of Colorado, New Mexico, Utah, and Wyoming under the alternative.

Furthermore, the DEIS's approach to protecting the Glen Canyon Dam river outlet works by reducing releases from Lake Powell—rather than making infrastructure repairs and improvements—is shortsighted and harms Nevada and the Lower Basin States by slashing the water available to our farmers, communities, and economies. These profound impacts can be avoided by some combination of straight-forward engineering fixes, moving water to Lake Powell from upstream reservoirs when necessary, and imposing consumptive use reductions in the Upper Basin.

These fundamental issues, further detailed in the enclosed Attachment 1, have been repeatedly communicated to the Bureau of Reclamation and made clear in public discussions. Despite our well-documented objections during the last administration, these serious flaws were incorporated into the DEIS, undermining the negotiation process among the seven Basin States.

Accordingly, Nevada requests that the Bureau of Reclamation collaborate more expansively with the Basin States to prepare a new draft supplemental environmental impact statement analysis that fully complies with NEPA and the Law of the River. Specifically, at a minimum, the updated analysis should include:

- Full consideration of the Lower Basin States Alternative in the alternatives analysis;
- Full consideration of the Nevada Proposed Approach to Short- and Long-term Operations provided with these comments;
- Full consideration of alternatives and impacts relating to reparation of the Glen Canyon Dam river outlet works; and
- Reclamation's planned compliance with the Law of the River in all future analysis.

Thank you for your time and consideration in reviewing these comments. We look forward to working together in the months and years ahead.

Sincerely,

John J. Entsminger
Governor's Representative
State of Nevada
Southern Nevada Water Authority

Eric P. Witkoski
Executive Director
Colorado River Commission of Nevada

cc:

Dr. Andrea Travnicek, Assistant Secretary of the U.S. Department of the Interior for Water and Science
Scott Cameron, Commissioner, Bureau of Reclamation
J.B. Hamby, Governor's Representative, State of California
Thomas Buschatzke, Governor's Representative, State of Arizona
Rebecca Mitchell, Governor's Representative, State of Colorado
Gene Schawcroft, Governor's Representative, State of Utah
Estevan Lopez, Governor's Representative, State of New Mexico
Brandon Gephard, Governor's Representative, State of Wyoming

Attachments:

Attachment 1: Nevada's DEIS Comments Document
Attachment 2: Nevada List of Errata/Missing Information in DEIS
Attachment 3: SNWA Technical Memorandum—"Comparing the Lower Basin Alternative with the DEIS Alternatives"
Attachment 4: Nevada Proposed Approach to Short- and Long-term Operations
Attachment 5: Index and Compilation of Exhibit Documents referenced in Nevada's Comments

ATTACHMENT 1

Nevada's Comments Submitted by SNWA and CRCNV on the Post-2026 Colorado River Reservoir Operations Draft Environmental Impact Statement (March 2, 2026)

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INTRODUCTION

On January 16, 2026, the Bureau of Reclamation ("Reclamation") issued its "Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead" Draft Environmental Impact Statement ("Draft EIS").[1] As detailed below, the Draft EIS fails to satisfy the requirements of the National Environmental Policy Act ("NEPA"). Reclamation's approach to managing the Colorado River reservoirs also fails to adequately account for and is inconsistent with the Law of the River. Accordingly, Southern Nevada Water Authority ("SNWA") and the Colorado River Commission of Nevada ("CRCNV"), on behalf of the State of Nevada, request that the Secretary of the Interior[2] direct Reclamation to collaborate more expansively with the Basin States to prepare an environmental analysis that fully complies with NEPA and the Law of the River.[3]

Nevada specifically requests that all of its comments and the Attachments (as listed in the transmittal letter) be included as part of the administrative record in this matter. Nevada also requests that all documents, articles, reports, and other material cited in these Comments or the Attachments be included as part of the administrative record. If Reclamation is unable to locate any of the documents referenced by Nevada's Comments that are not otherwise included in the Attachments here, copies may be obtained by contacting Steven Anderson, Deputy Counsel, SNWA.

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[1] *See* 92 Fed. Reg. 2,131 (Jan. 16, 2026).

[2] The Secretary of the Interior must operate the Colorado River water delivery systems in compliance with the Law of the River. *E.g.*, Colorado River Basin Project Act ("CRBPA") § 602(a)-(b), 43 U.S.C. § 1552(a)-(b) (directing the Secretary to consultatively develop operational criteria—known as Long-Range Operating Criteria ("LROC")—for federally authorized Colorado River reservoirs); *see also Arizona v. California*, 376 U.S. 340 (1964).

[3] For the purposes of these comments, the Law of the River consists of the Colorado River Compact of 1922, 43 U.S.C. § 617, the Consolidated Decree entered by the U.S. Supreme Court in the case of *Arizona v. California*, 547 U.S. 150 (2006) (Consolidated Decree), the 1944 Treaty with Mexico, LROC, the CRBPA § 602, 43 U.S.C. § 1501 et seq., and other legal requirements. *See* Draft EIS, Sec. 1.8.2.1, at 1-13 to 1-14. Draft EIS Table 1-1 also sets forth numerous other instruments and documents that comprise the Law of the River. *See* Draft EIS, Sec. 1.8.2.1, at 1-14.

BACKGROUND

Lower Basin States Conservation Efforts

Nevada, as part of the Lower Basin States, has demonstrated a long and well-documented history of taking actions to conserve water and reduce existing uses to protect the Colorado River:

- In a consensus-based proposal, the Lower Basin States voluntarily agreed to conserve 3 million acre-feet ("maf") leading up to 2026.[4]
- SNWA reduced water consumption from 325,000 acre-feet of water (105.9 billion gallons) in 2002, to 212,418 acre-feet (69 billion gallons) in 2024 despite an increase of 829,000 new residents.[5]
- SNWA established a new conservation goal of 86 gallons per capita per day by 2035.[6]

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[4] *See* Press Release, Dep't of the Interior, *Seven Basin states agree on analyzing consensus-based approach proposed by the Lower Basin* (May 22, 2023), available at https://www.doi.gov/pressreleases/biden-harris-administration-announces-historic-consensus-system-conservation-proposal.

[5] Reclamation, *Colorado River Accounting and Water Use Report: Arizona, California, and Nevada* (for calendar year 2024), at 5 (May 2025), available at www.usbr.gov/lc/region/g4000/4200Rpts/DecreeRpt/2024/2024.pdf; *see* SNWA, *2026 Water Resource Plan*, at 23 (2025) (referenced throughout as "SNWA 2026 Water Resource Plan") available at https://www.snwa.com/assets/pdf/water-resource-plan-2026.pdf?lang=en.

SNWA's current water conservation measures include the Water Smart Landscape Rebate Program (250 million square feet of grass has been removed, saving 203 billion gallons of water since 1999); Water Efficient Technologies Program (participating businesses have saved more than 24 billion gallons of water through the program since 2001); Water Smart Homes (nearly 17,000 homes were built using water conservation features via the program from 2005-2020, saving 14 billion gallons of water); and Pool Cover Instant Rebate Coupon Program (more than 45,000 coupons were distributed before the program was retired in June 2020, saving an estimated 5.6 billion gallons of water). *See also* SNWA, What We're Doing to Conserve, https://www.snwa.com/water-resources/conservation-initiatives/index.html (last visited Feb. 27, 2026).

[6] SNWA 2026 Water Resource Plan, at 39. The updated edition of the landmark history, *Cadillac Desert*, praised SNWA's water conservation efforts: "Every drop issuing from the city's dishwashers, sinks, showers, carwashes, and even toilets is funneled through the sewer system into wastewater treatment facilities, and returned to the Colorado River and Lake Mead via the

- As described in SNWA's 2026 Water Resource Plan, "SNWA has stored more than 2.2 million acre-feet of water, eleven times Nevada's 2024 consumptive Colorado River water use."[7]

The Lower Basin States are committed to continuing and expanding those efforts. But the Lower Basin States cannot shoulder the burden of protecting the Colorado River on their own. To date, the Upper Basin States have been unwilling to contribute water to the Colorado River system in a volume that would avoid the Lower Basin States taking the full burden of dry hydrologic future conditions. Upper Basin States have received sharp criticism for failing to support and implement more water conservation programs.[8]

NEPA Alternatives Development Process and Lower Basin Alternative Submission

Reclamation began developing NEPA alternatives in late 2023. In March 2024, the Lower Basin States submitted their recommended alternative ("Lower Basin Alternative") to Reclamation for consideration in the ongoing NEPA process.[9] Subsequent to the initial

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Las Vegas Wash . . . . Southern Nevada can and actually does pump much more water than its 300,000 acre-feet per year . . . . Since 2000 [SNWA] has spent $200 million in rebates for replacing grass with desert landscapes." MARC REISNER, CADILLAC DESERT: THE AMERICAN WEST AND ITS DISAPPEARING WATER, at 527 (1986, 2017 proscript to the revised edition, by Lawrie Mott).

[7] SNWA 2026 Water Resource Plan, at 3.

[8] *See* Sammy Roth, *These Four States Are in Denial Over a Looming Water Crisis*, NY Times (Feb. 2, 2026) ("[T]he Upper Basin states of Colorado, New Mexico, Utah and Wyoming have emerged as the main obstacles to a fair deal. They've gummed up negotiations by refusing to accept mandatory cuts of any amount — unlike the Lower Basin states, which have spent years slashing water use."), available at https://www.nytimes.com/2026/02/02/opinion/water-shortage-colorado-river.html; Jack Schmidt, Anne Castle, John Fleck, Eric Kuhn, Kathryn Sorensen, and Katherine Tara, *Analysis of Colorado River Basin Storage Suggests Need For Immediate Action*, at 8 n. 35 (Getches-Wilkinson Center, University of Colorado-Boulder, Sep. 11, 2025) ("Cumulative conservation in the Lower Basin for 2023 - 2025 is estimated at 2.93 million acre feet . . . . Upper Basin conservation during the same time period was approximately 0.1 [maf], but it is unclear how much of that water ultimately made its way to Lake Powell.").

[9] The Lower Basin States informed Reclamation why the Lower Basin Alternative is viable and environmentally beneficial. The Lower Basin Alternative "builds on the foundation of the Law of the River and proposes a more holistic and sustainable approach to managing the Colorado River system reservoirs. The Lower Basin Alternative shares proposed water use reductions fairly among the Lower Basin States and Mexico to satisfy the 1.5 maf of proposed reductions under most system conditions. Further, under the most critical system conditions, the Alternative shares water use reductions fairly between the Upper Basin and Lower Basin including Mexico. The Lower Basin Alternative contemplates a broad, fair, and equitable

submittal of the Lower Basin Alternative in March 2024, in June and December 2024, the Lower Basin States requested that Reclamation evaluate compliance with the 1922 Colorado River Compact under each NEPA alternative. Also, in the December 2024 request, the Lower Basin States provided the Compact compliance assumptions to be incorporated into the Draft EIS alternatives, including:

- Required deliveries pursuant to Article III of the Compact.
- Compact Call by the Lower Basin States.
- Upper Basin curtailment or other reductions as necessary to comply with the Compact requirements.
- Actions by the United States in management of federal reservoirs.[10]

In November 2024, Reclamation issued a summary of the anticipated alternatives that Reclamation would carry forward for detailed analysis in the Draft EIS, which included:

- No action alternative
- Federal authorities alternative
- Federal authorities hybrid alternative
- Cooperative conservation alternative
- Basin hybrid alternative

These alternatives did not include the Lower Basin Alternative or the Upper Basin Alternative. Reclamation claimed in its Alternatives Report issued on January 17, 2025, that they did not satisfy the purpose and need for its proposed action.[11] Reclamation maintained

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sharing of reductions such that no one state, sector or water user bears the entire burden of protecting the system." Letter from Water Districts to Reclamation, at 3 (Mar. 6, 2024).

[10] These assumptions were described more fully in correspondence. *See* Correspondence from J.B. Hamby, Chairman, Colorado River Board of California to Reclamation (Dec. 24, 2024 at 8:49:40 AM).

[11] *See* Reclamation, *Alternatives Report: Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead*, at 9 (Jan. 17, 2025) ("Alternatives Report") ("Based on preliminary modeling results, Reclamation concluded that, as submitted in the spring of 2024, the Upper Division and Lower Division proposals do not provide an appropriate basis for comprehensive and coordinated operations of Lake Powell and Lake Mead, a necessary component of the purpose and need for this proposed action. During conversations with Basin State representatives, Reclamation identified and communicated concerns about imbalanced Basin impacts and lack of reservoir coordination."), available at https://www.usbr.gov/ColoradoRiverBasin/documents/post2026/alternatives/Post-2026_Alternatives_Report_20250117_508.pdf.

that the "Basin Hybrid Alternative" "reflects components of the proposals and concepts submitted by the . . . Lower Division States" and others, including the Upper Division States and Colorado River Basin Tribes.[12] The Lower Basin States objected to Reclamation's cherry picking elements of the Lower Basin Alternative because the various elements of this alternative "work synergistically and . . . it would be inappropriate to separate individual elements and presume their stand-alone implementability."[13] The Lower Basin States also provided Reclamation an amended Lower Basin Alternative, which included refinements on the proposed releases from Lake Powell to better protect Lake Powell over the analysis period.[14]

On January 17, 2025, Reclamation published its Alternatives Report that described in more detail the five alternatives previously identified by Reclamation in its November 20, 2024, summary. In the Alternatives Report, Reclamation concluded that "as submitted in the spring of 2024" the Lower Basin States' proposal did "not provide an appropriate basis for comprehensive and coordinated operations of Lake Powell and Lake Mead, a necessary component of the purpose and need for this proposed action."[15] Reclamation also claimed that it had "identified and communicated concerns about imbalanced Basin impacts and lack of reservoir coordination."[16]

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[12] *Id*. at ES-2 ("**Basin Hybrid Alternative** – This alternative reflects components of the proposals and concepts submitted by the Upper Division States, Lower Division States, and Colorado River Basin Tribes that could provide a basis for coordinated operations and may facilitate greater agreement across the Basin.") (emphasis in original).

[13] *See* Correspondence from Tom Buschatzke, Director, Arizona Department of Water Resources to Reclamation (Jan. 13, 2025 at 3:40:25 PM PST).

[14] Specifically, in the original Lower Basin Alternative, the Lake Powell release criteria used an operational tier framework based on the combined system contents of Lake Powell and on the Upper Initial Units, namely Flaming Gorge, Blue Mesa, and Navajo Reservoirs (CRSP Capacity). Within this framework, the 30% to 80% operating tier relied on a three-year average of Upper Basin depletions to determine the water year release volume, while a CRSP Capacity below 80% could trigger a mid-year balancing adjustment. In contrast, the revised Lower Basin Alternative also used an operational tier approach based on CRSP Capacity, but differed in the capacity ranges defining each tier and added a 1.0 maf upward or downward adjustment to the water year release determination based on Lake Mead's October 1st operating conditions. While both proposals shared the same upper release limit, they differed at the lower end, with the revised proposal considering a 5.5 maf release compared to the original proposal's 6.0 maf minimum.

[15] *See* Alternatives Report, Sec. 6.2, at 9.

[16] *Id*.

On February 13, 2025, the Lower Basin States provided detailed comments to Reclamation on the Alternatives Report, and requested a meeting with Reclamation personnel "as soon as practicable" to, among other things, ensure that Reclamation fully understood the need for inclusion of the Lower Basin States Alternative in the Draft EIS because,

> Without a detailed analysis of the Lower Basin Alternative, the EIS will not have considered a reasonable range of alternatives, will leave unevaluated a viable alternative that meets the project's purpose and need and is distinguishable from the other alternatives that Reclamation has carried forward for detailed analysis. These detailed comments were never addressed. Reclamation must comply with NEPA in this process and must revise its alternatives accordingly.[17]

On January 16, 2026, Reclamation published and initiated public comment on the Draft EIS, which included the following alternatives slightly revised from the prior Alternatives Report:

- No Action Alternative
- Basic Coordination Alternative
- Enhanced Coordination Alternative
- Maximum Operational Flexibility Alternative
- Supply Driven Alternative

But again, Reclamation omitted from its consideration the Lower Basin Alternative. Instead, Reclamation claimed that one of its alternatives (this time the "Supply Driven Alternative") "incorporates concepts from the separate proposals submitted by the Upper Division and Lower Division States, as well as ideas emerging from discussions with the Basin States during spring 2025."[18] Yet Reclamation refuses to consider and carry forward the Lower Basin Alternative, despite the fact that the Lower Basin Alternative better meets the purpose and need of the proposed action than the alternatives advanced by Reclamation in the Draft EIS, as demonstrated below.

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[17] *See* Letter from Lower Basin States to Doug Burgum, Secretary of the Interior, regarding "Perspectives from the Lower Basin States on the Colorado River Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead," at 23–24 (Feb. 13, 2025).

[18] Draft EIS, Sec. 2.1, at 2-2.

Current Low Flow and Megadrought Conditions

The Draft EIS acknowledges that water and other "resources are now at significant risk":

> [S]ince the onset of the current drought in 2000, the Basin's primary reservoirs, Lake Powell and Lake Mead, have fallen to historically low elevations. Several of the major reservoir- and water-management documents and agreements developed to guide Colorado River operations through the persistently dry conditions expire in 2026, including the 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead (2007 Interim Guidelines; Reclamation 2007), the 2019 Colorado River Drought Contingency Plans (DCPs, Reclamation 2019), and key international agreements between the United States and Mexico. Despite the significance of these agreements, actions taken over the past two decades have not been sufficiently robust to prevent continued decline of the reservoirs.[19]

Furthermore, on February 14, 2026, Reclamation released its "February 2026 Most Probable 24-Month Study," which provided revised projections indicating that Glen Canyon Dam elevations could drop below minimum power pool (3,490 feet) as early as July 2026.[20]

DISCUSSION

I. Reclamation's Proposed Action Violates the Law of the River

Reclamation acknowledges that its proposed action must comply with the Law of the River:

> [T]he Secretary intends to consider, adopt and implement the proposed federal action consistent with the Law of the River, including the Colorado River Compact of 1922 (Compact; 43 U.S. Code [USC] § 617*l*), the Consolidated Decree entered by the U.S. Supreme Court in the case of *Arizona v. California*, 547 U.S. 150

[19] *Id*., Sec. 1.1, at 1-1.

[20] Reclamation, *February 2026 Most Probable 24-Month Study* (Feb. 13, 2026), available at https://www.usbr.gov/lc/region/g4000/24mo.pdf; *see* Reclamation, *24-Month Study Inflow Scenarios* (Jan. 16, 2026).

(2006) (Consolidated Decree), and other provisions of applicable federal law."[21]

And yet, **none of Reclamation's alternatives comply with the Law of the River**.

A. None of the Alternatives in the Draft EIS Complies with the Compact

The Compact apportions to the Upper and Lower Basin States, "respectively, the exclusive beneficial consumptive use of 7,500,000 acre-feet of water per annum, which shall include all water necessary for the supply of any rights which may now exist."[22] Under Article III(d) of the Compact, "[t]he States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet [75 maf] for any period of ten consecutive years reckoned in continuing progressive series beginning with the first day of October next succeeding the ratification of this compact." Furthermore, Compact Article III(c) requires the Upper Basin States to share in the annual obligation to deliver 1.5 maf of mainstream Colorado River water to Mexico.[23]

Reclamation recognizes that "[t]he Lee Ferry Compact Point is the division point between the Upper Basin and the Lower Basin, as established by the 1922 Colorado River Compact," and provides an analysis of its modeling for "for the 10-Year flow volumes at the Lee Ferry Compact Point under each alternative to assess how they perform over a range of hydrologic conditions."[24] While the analysis provides useful information, the overall analytical approach fails to consider a reasonable outcome of a judicial determination that may constrain operations at Lee Ferry to a 10-year volume of 75 maf or 82.5 maf. **The analysis shows 10-year Lee Ferry Compact Point flows that would violate the Compact even under average flow conditions in some cases.** Moreover, Reclamation fails to analyze the impacts of these potential constraints on all affected resources and geographic areas. As a result, the analysis is unreasonably limited and insufficient to make a reasoned choice among alternatives to ensure

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[21] Draft EIS, Sec. 1.1, at 1-4 (referencing Compact, 43 U.S.C. § 617*l*) (footnotes and hyperlinks omitted).

[22] Compact, Art. III(a).

[23] The annual Colorado River water debt owed to Mexico pursuant to international treaty obligations "shall be supplied first from the waters which are surplus over and above the aggregate of the quantities specified in paragraphs (a) and (b); and if such surplus shall prove insufficient for this purpose, then, the burden of such deficiency shall be equally borne by the Upper Basin and the Lower Basin, and whenever necessary the States of the **Upper Division shall deliver at Lee Ferry water to supply one-half of the deficiency** so recognized in addition to that provided in paragraph (d)." Compact, Art. III(c) (emphases added).

[24] Draft EIS, Tech. Appx. 3, Sec. TA 3.2.3, at 3-63 to 3-65 & Figure TA 3-23.

Compact compliance. Thus, if implemented, any of the Alternatives based upon Reclamation's own analysis would violate the Compact, and fail to satisfy NEPA's "hard look" requirement.[25] NEPA is not a shell game. NEPA requires that the lead agency identify and carry forward "reasonable alternatives" that "are technically and economically feasible, **meet the purpose and need** for the proposed action, are within the jurisdiction of the bureau, and, where applicable, meet the goals of the applicant."[26]

Moreover, Article III(e) of the Compact provides that the Upper Basin States "shall not withhold water . . . which cannot reasonably be applied for domestic and agricultural uses." And the 2006 Supreme Court Decree prohibits Reclamation from treating unused water as "consumptive use" defined as "diversions from the stream less such return flow."[27] Reclamation fails to analyze and demonstrate compliance with these requirements under each alternative. Indeed, it appears from the modeling that during low flow conditions, each of the action alternatives violates delivery obligations to the Lower Basin States, as required by the Compact.

B. Reclamation Has Failed to Demonstrate How Each Alternative Complies with the 1968 and 1970 Long-Range Operating Criteria ("LROC")

Reclamation acknowledges that LROC Article II(2) states that the "objective shall be to maintain a minimum release of water from Lake Powell of 8.23 [maf]."[28] Reclamation recognizes that "variation in releases of water above and **below the minimum objective release of 8.23 maf** can, in **appropriate circumstances**, be adopted."[29] **Thus, Reclamation admits to failing to satisfy LROC during certain low flow conditions.** Yet, nowhere in its NEPA analysis does Reclamation explain what it believes are the "appropriate circumstances" for violating the "minimum" delivery requirements of LROC. Consequently, Reclamation's analysis

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[25] *See Friends of Animals v. Burgum*, 164 F.4th 738 (9th Cir. 2026), 2026 U.S. App. LEXIS 897, at *17 (9th Cir. Jan. 14, 2026) ("NEPA does not contain substantive environmental standards, but instead establishes action-forcing procedures that require agencies to take a **hard look** at environmental consequences.") (citing *Kern v. U.S. Bureau of Land Mgmt*., 284 F.3d 1062, 1066 (9th Cir. 2002)) (emphasis added) (internal quotations omitted).

[26] DEP'T OF THE INTERIOR, HANDBOOK OF NATIONAL ENVIRONMENTAL POLICY ACT IMPLEMENTING PROCEDURES, 516 DM 1, § 6.1(v), at 25 (Feb. 23, 2026) (emphasis added) (cited throughout as "DOI NEPA Implementing Procedures"), available at https://www.doi.gov/document-library/handbook/516-dm-1-handbook-national-environmental-policy-act-implementing.

[27] *See* Supreme Court Decree in *Arizona v. California*, 547 U.S. 150, 153, 156 (2006) (Secs. I(A) and II(B)(6)).

[28] Draft EIS, Sec. 2.4.2, at 2-9.

[29] *Id.* at 2-9 (emphases added).

lacks transparency and integrity regarding this mandatory legal requirement. NEPA requires that the responsible bureau official ensure that the underlying analysis reflects "professional integrity, including scientific integrity" and makes "use of reliable data and resources."[30] The preamble to the Federal Register notice to the NEPA implementing regulations of the Department of the Interior ("DOI") emphasizes the importance of doing so in connection with preparing the no action and other alternatives.[31]

C. Reclamation Must, But Has Failed, to Exercise Authority to Operate the CRSP Initial Units in Compliance with the Compact

The Colorado River Storage Project ("CRSP") Act of 1956 authorized development of a comprehensive water development plan for the Upper Basin that included constructing Glen Canyon Dam and other facilities.[32] The Colorado River Basin Project Act of 1968 ("CRBPA") further establishes how such facilities would be operated to ensure required water deliveries below the CRSP reservoirs pursuant to Compact obligations and, as provided in CRBP Act § 602(a), water required to comply with the Mexican Water Treaty.[33] The relevant statutory language provides:

> In order to comply with and carry out the provisions of the Colorado River Compact [of 1922], the Upper Colorado River Basin Compact, and the Mexican Water Treaty, the Secretary shall propose criteria for the coordinated long-range operation of [the CRSP reservoirs and Lake Mead] . . . . [**T]he criteria shall make provision for the storage of water in [CRSP Reservoirs] and**

[30] 42 U.S.C. § 4332(2)(D), (E); *see* Sec'y of the Interior Order No. 3441, Restoring Gold Standard Science (May 23, 2025); *see also* 43 C.F.R. § 46.105(c) (requiring bureau-directed contractors to submit professional integrity certifying the use of reliable data and resources).

[31] *See* 91 Fed. Reg. 8738, 8379 (Feb. 24, 2026) ("NEPA further mandates that federal agencies ensure the professional and scientific integrity of environmental documents; use reliable data and resources when carrying out NEPA; and study, develop, and describe technically and economically feasible **alternatives**.") (emphasis added).

[32] The CRSP Upper Initial Units include Flaming Gorge, Blue Mesa (a component of the Aspinall Unit), and Navajo reservoirs. They are governed by Reclamation records of decision dated 2006, 2012, and 2006, respectively. *See* Draft EIS, Executive Summary, Sec. ES.2.3., at ES-17 at n.5.

[33] For example, the 1962 San Juan-Chama Authorization Act (Public Law 87-483) authorized Reclamation to construct and operate the San Juan-Chama Project as part of the CRSP Act. Section 16(a) of the 1962 Act makes clear that creation of the units and projects "shall in no way impair or diminish" the obligations of the "States of the upper division" to comply with Articles III C and D of the Compact.

> **releases of water from Lake Powell in the following listed order of priority:** (1) releases to supply one-half the deficiency described in article III(c) of the Colorado River Compact, if any such deficiency exists and is chargeable to the States of the Upper Division . . . (2) releases to comply with article III(d) of the Colorado River Compact, less such quantities of water delivered into the Colorado River below Lee Ferry to the credit of the States of the Upper Division from other sources; and (3) **storage of water not required for the releases specified in clauses (1) and (2)** of this subsection **to the extent the Secretary . . . shall find this to be reasonably necessary to assure deliveries under clauses (1) and (2)** without impairment of annual consumptive uses in the upper basin pursuant to the Colorado River Compact: *Provided*, That water not so required to be stored shall be released from Lake Powell: (i) to the extent it can be reasonably applied in the States of the Lower Division to the uses specified in article III(e) of the Colorado River Compact [except when] the active storage in Lake Powell is less than the active storage in Lake Mead, (ii) to maintain, as nearly as practicable, active storage in Lake Mead equal to the active storage in Lake Powell . . . .[34]

Reclamation asserts that its alternatives analysis "shows the range of approaches to releases from CRSP Upper Initial Units to protect Glen Canyon Dam infrastructure, the maximum amount of conserved water that could be stored, assumptions about the amount of annual Upper Basin conservation, and rules for when Upper Basin conserved water would be converted to system water."[35] Yet, Reclamation fails to describe how the release determinations required under Colorado River Basin Project Act § 602(a) will be factored into each alternative especially during low flow conditions.[36] Moreover, Reclamation's discussion of the "activities above Lake Powell" is critical to benefit both Lake Powell and Lake Mead elevations, and meet water delivery obligations. Indeed, pursuant to CRBPA § 602(a), in 1970, Reclamation issued the Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs to establish coordinated operations for reservoirs in the Upper and Lower basins, specifically when water releases from Lake Powell to Lake Mead should occur. In accordance with LROC, an "objective release" of 8.23 million acre-feet per year is targeted for downstream delivery. This issue is also relevant to Reclamation's failure to address a reasonably foreseeable

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[34] CRBPA § 602(a), 43 U.S.C. § 1552(a) (emphases added).

[35] Draft EIS, Executive Summary, Sec. ES.2.3., at ES-17.

[36] 43 U.S.C. § 1552(a); *see also* 69 Fed. Reg. 28945 (May 19, 2004) (adoption of an Interim 602(a) Storage Guideline for Management of the Colorado River).

Compact Call (discussed below) and obligations for the Upper Division to satisfy one-half of the water delivery to Mexico under the 1944 Treaty.

Furthermore, Section 14 of the 1956 Colorado River Storage Project Act ("CRSP Act") requires that:

> In the operation and maintenance of all facilities, authorized by Federal law and under the jurisdiction and supervision of the Secretary of the Interior, in the basin of the Colorado River, the Secretary of the Interior is directed to comply with the applicable provisions of the Colorado River Compact, the Upper Colorado River Basin Compact, the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, and the Treaty with the United Mexican States, in the storage and release of water from reservoirs in the Colorado River Basin.[37]

This section of the CRSP Act requires that Reclamation manage **both** CRSP Upper Initial Units and other participating projects in compliance with the Compact. There is not a single alternative where Reclamation mentions, much less modifies, the operations of the federal projects subject to the CRSP Act to comply with the Compact or Section 602, including the paramount obligation to release water from the Upper Basin to satisfy one-half of the obligation to Mexico. In short, Reclamation has clear federal authorities for release regimes from CRSP reservoirs, but has entirely ignored its statutory obligations, as none of the alternatives address issues such as the reasonable foreseeability of providing water from CRSP units to meet obligations to Mexico.

D. Reclamation Failed to Describe for Each Alternative How it Would Exercise its Existing Legal Authority and What Additional Authority it Would Need to Meet the Purpose and Need, and Comply with the Law of the River

Reclamation repeatedly excuses itself from conducting the required detailed analysis of alternatives, including *how* it would exercise its legal authority to operate the reservoirs and deliver water during low flow conditions. Reclamation claims that the full scope and limits of its legal authority are unclear or have not been "tested" in the courts:

- In the Chapter 2 Alternatives analysis introduction, Reclamation gives a blanket excuse for not offering *any* action alternative that fully complies with its obligations under the Law of the River. After first acknowledging that "[t]he Secretary has the vested authority and responsibility to operate the System through coordinated operations . . . pursuant to applicable federal law, the Decree, contractual obligations, and other elements of the Law of the River[, t]he **full extent of**

[37] 43 U.S.C. § 620.

Reclamation's operational authority has not been tested to date—either operationally or through legislative or judicial review."[38] Nowhere does Reclamation describe the "extent" of its operational authority.

- Regarding the Basic Coordination Alternative, Reclamation admits that this alternative "may not provide adequate protection of critical infrastructure or the system and may be viable only in the short term given current reservoir conditions."[39] To remedy this situation, in the event the Basic Coordination Alternative is selected, Reclamation plans to "identify the conditions under which further action would be required, including adjustment of operations and prompt action to seek **additional authorities**, if needed."[40] Nowhere does Reclamation describe what "additional authorities" it would need to fully implement the Basic Coordination Alternative to satisfy its obligations under the Law of the River.

- The Enhanced Coordination Alternative applies a "pro rata Lower Basin shortage distribution to evaluate the potential impacts of distributing reductions among all mainstream lower Colorado River water users in Arizona, Nevada, and California" during low flow conditions with no similar reductions assigned to the Upper Basin States, explaining that "**[a]dditional agreements** and **other legal authorities would be needed** to implement any pro rata operations that are inconsistent with the Decree."[41] Nowhere does Reclamation describe what "additional agreements" or "other legal authorities" it would need to fully implement the Enhanced Coordination Alternative to satisfy its obligations under the Law of the River.

- Reclamation avoids setting out how it would maintain minimum releases of 8.23 maf from Lake Powell under the No Action Alternative (other than it would prioritize protection of Glen Canyon Dam due to infrastructure limitations) because the basin states "have **different legal positions** regarding how this LROC statement incorporates other Law of the River elements to determine annual releases."[42] Nowhere in the Draft EIS does Reclamation set forth how it interprets and would apply LROC during low flow conditions under the No Action Alternative.

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[38] Draft EIS, Sec. 2.3, at 2-5 (emphasis added).

[39] *Id*., Sec. 2.5, at 2-11.

[40] *Id*. at 2-11 to 2-12 (emphasis added).

[41] *Id*., Sec. 2.6, at 2-16 & n.18.

[42] *Id.*, Secs. 2.4.2, 2.10, at 2-9, 2-23.

- Reclamation screened alternatives from detailed analysis, explaining that its analysis was "[i]nclusive of existing legal authorities and contractual obligations. This would not preclude the **reasonably foreseeable acquisition of certain new or modified legal authorities necessary to implement new interim guidelines**. However, **new legal authorities** that would result in impracticalities or are unlikely to be widely acceptable among stakeholders **are too speculative to include in this Draft EIS**."[43] Ironically, even though they are "reasonably foreseeable," nowhere in the Draft EIS does Reclamation describe or provide examples of necessary "new or modified legal authorities." Nor does Reclamation discuss what efforts it has taken to evaluate the potential success of new or modified legal authorities.[44]

Notwithstanding Reclamation's repeated protests, Reclamation cannot hide behind regulatory or legal uncertainty to avoid advancing and fully analyzing a reasonable range of alternatives that meets the purpose and need of the proposed action *and* complies with the Law of the River.[45]

First, by statute, NEPA requires that Reclamation comply with "**specific statutory obligations**" other than NEPA that require Reclamation to "to coordinate or **consult with** any other Federal or **State agency**," which is precisely what the Compact and other requirements of the Law of the River impose on Reclamation as operator of the reservoirs.[46] Similarly, NEPA does not absolve Reclamation from, "to the **fullest extent possible,"** complying with the "policies, regulations, and public laws of the United States" which "shall be **interpreted** and administered" by Reclamation "in accordance with the policies set forth in [NEPA]."[47] Reclamation cannot satisfy these basic NEPA requirements without identifying and interpreting such laws and regulations. Indeed, DOI's NEPA Implementing Procedures expressly direct that

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[43] *Id*., Sec. 2.9, at 2-35 to 2-36 & n.26.

[44] *Cf. Muckleshoot Indian Tribe v. U.S. Forest Serv.*, 177 F.3d 800, 814 (9th Cir. 1999) (Forest Service failed to consider reasonable range of alternatives when it did not explore requesting an appropriation); *see also Simmons v. United States Army Corps of Eng'rs,* 120 F.3d 664, 669-70 (7th Cir. 1997) (Court found that Army Corps of Engineers failed to consider reasonable range of alternatives which may have included constructing two separate water projects. Without any discussion of why this potential alternative was omitted, the court could not determine the feasibility of the two-project approach).

[45] *Solar Energy Indus. Ass'n v. FERC*, 80 F.4th 956, 995 (9th Cir. 2023) ("[A]t least some degree of speculation is implicit in NEPA, agencies may not shirk their responsibilities under NEPA by labeling . . . discussion . . . as [a] crystal ball inquiry.") (internal punctuation and citations omitted).

[46] *See* NEPA § 104, 42 U.S.C. § 4334 (emphasis added).

[47] *Id.* § 102, 42 U.S.C. § 4332 (emphasis added).

Reclamation "identify consultations, permits, or licenses necessary under other environmental laws" and explain "how the bureau has met or will meet any such requirements that apply to the proposed action."[48]

Second, NEPA is not a shell game in which stakeholders and the regulated community must guess at Reclamation's intentions with respect to how it intends to comply with its many statutory and regulatory obligations under the Law of the River under each alternative. As explained in DOI's NEPA Implementing Procedures, NEPA requires that the lead agency identify and carry forward "reasonable alternatives" that "are technically and economically feasible, **meet the purpose and need** for the proposed action, are **within the jurisdiction of the bureau**, and, where applicable, meet the goals of the applicant."[49] If Reclamation believes it lacks "jurisdiction" or legal authority, it should clearly articulate what legal authority it believes it has to implement an alternative and what specific additional authority it believes it needs by statute or contractual (i.e., by agreement among the Basin States) to implement the alternative. But it cannot carry forward an alternative that does not meet the purpose and need or comply with applicable legal requirements.[50] In addition, DOI's guidance indicates that Reclamation should explain why an alternative was "eliminated from detailed study" due to lack of jurisdiction or for another reason.[51]

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[48] DOI NEPA Implementing Procedures § 3.8(c), at 20 (Feb. 23, 2026) (emphasis added). One key consultation requirement applicable to Colorado River operations and this NEPA analysis is found in the Supreme Court Decree in *Arizona v. California*, 547 U.S. 150, 155-56 (2006) (Sec. II(B)(3)) ("If insufficient mainstream water is available for release, as determined by the Secretary of the Interior, to satisfy annual consumptive use of 7,500,000 acre-feet in the aforesaid three States, then the Secretary of the Interior, after providing for satisfaction of present perfected rights in the order of their priority dates without regard to state lines and after consultation with the parties to major delivery contracts and such representatives as the respective States may designate, may apportion the amount remaining available for consumptive use in such manner as is consistent with the Boulder Canyon Project Act as interpreted by the opinion of this Court herein, and with other applicable federal statutes, but in no event shall more than 4,400,000 acre-feet be apportioned for use in California including all present perfected rights[.]").

[49] *Id*. § 6.1, at 25 (emphasis added).

[50] *Citizens' Comm. to Save Our Canyons v. U.S. Forest Serv.*, 297 F.3d 1012, 1031 (10th Cir. 2002) ("Alternatives that 'do not accomplish the purpose of an action are not reasonable' and need not be studied in detail by the agency."); *see League of Wilderness Defs.-Blue Mts. Biodiversity Project v. U.S. Forest Serv.,* 689 F.3d 1060, 1064 (9th Cir. 2012).

[51] DOI NEPA Implementing Procedures, Appx. 1, at 39.

Third, Reclamation offers contradictory statements regarding its jurisdiction. In some instances, it claims to lack authority without specifying why. In other instances, it claims to hold sufficient authority to act but will seek additional **unspecified** legal authority in the future to fully implement an alternative. For example, Reclamation states the following with respect to the Basic Coordination Alternative:

> [T]he Secretary has the vested authority and responsibility to operate the System through coordinated operations, including the ability to respond to exigent and emergency conditions, pursuant to applicable federal law, the Decree, contractual obligations, and other elements of the Law of the River. The full extent of Reclamation's operational authority has not been tested to date—either operationally or through legislative or judicial review. Accordingly, Reclamation's description of how this alternative would be implemented relies on legal, operational, and engineering judgment regarding future operations under a broad range of hydrologic conditions . . . . **This alternative proposes that the Secretary may seek new authorities to implement additional measures to protect critically low elevations at Lake Mead including additional shortages to Lower Basin water users**.[52]

The lack of case law or other directives delineating Reclamation's authority in no way reduces NEPA's requirement to adequately describe Reclamation's authority and jurisdiction to implement a reasonable range of alternatives. It may well be appropriate for Reclamation at a future date to request additional statutory or contractual authority to meet the project purpose and need in the long-term. But Reclamation cannot hide behind a "future" request for authority—NEPA requires Reclamation to identify with particularity the technical, economic, and legal constraints and assumptions underlying the alternatives analysis.[53]

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[52] Draft EIS., Secs. 2.5, 2.5.1.1, at 2-11, 2-13 n.16 (emphasis added).

[53] *See* 42 U.S.C. § 4332(2)(D)-(F) (requiring scientific integrity, use of reliable data, and study and development of technically and economically feasible alternatives); *see also* Sec'y of the Interior Order No. 3441, Restoring Gold Standard Science (May 23, 2025) (emphasizing that "[s]cience should be open and accessible with all components of the research process shared comprehensively" and that for "complex scientific challenges" agencies should use "multi-disciplinary integration of expertise, methodologies, and perspectives"); *see also Muckleshoot Indian Tribe*, 177 F.3d at 814 (9th Cir. 1999) (holding that Forest Service failed to meet NEPA's requirements when it did not consider an alternative which required the Forest Service to make a request for appropriations).

Fourth, Reclamation fails to address what its default operations would be if it was unsuccessful in obtaining new, albeit unspecified, federal authorities or if water users failed to execute additional voluntary agreements. Nor does Reclamation describe the operational consequences and environmental effects from failing to obtain additional authorities. The failure to provide such analysis renders the Draft EIS incomplete and inadequate to inform decisionmakers and stakeholders.

Reclamation's approach fails to provide decisionmakers and stakeholders with the basic information to satisfy NEPA's twin aims to ensure that (1) federal agencies will "have available, and will carefully consider, detailed information concerning significant environmental effects" of each alternative, and (2) "**relevant information** will be made available" to the public and other government agencies.[54] As the Supreme Court has emphasized, "by focusing the agency's attention on the environmental consequences of a proposed [action], NEPA ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast."[55] NEPA's procedural and analytical requirements are designed to ensure that all "**relevant information** will be made available to the larger audience that may also play a role in both the decision making process and the implementation of that decision."[56]

For the purposes of this NEPA process, the most "**relevant information**" includes how, under each alternative, Reclamation must apply the Law of the River in "accordance with" and subject to the "statutory jurisdiction, authority, or limitations," and "procedures" set forth in applicable laws governing Colorado River operations. Reclamation's "operational elements" common to each alternative admit that "reductions in water deliveries" and "criteria to trigger reductions" mandate full consideration of how the Law of the River factors into each alternative.[57] If Reclamation fails to explain its interpretation of the key elements of the Law of the River and how they apply to each alternative especially during low flow conditions, the EIS analysis will be incomplete, lack transparency, and fail to meet the "hard look" requirement.[58]

An agency's actions, findings, and conclusions are unlawful if they are "arbitrary, capricious, an abuse of discretion, or otherwise not in **accordance with law**," "in excess of

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[54] *See Robertson v. Methow Valley Citizen's Council*, 490 U.S. 332, 349-50 (1989).

[55] *Id*. at 349.

[56] *Id*. (emphasis added); *see also WildEarth Guardians v. Bureau of Land Mgmt.*, 870 F.3d 1222, 1237 (10th Cir. 2017) ("NEPA has two purposes: prevent uninformed agency decisions and provide adequate disclosure to allow public participation in those decisions.") (citing *Methow Valley*, 490 U.S. at 349).

[57] Draft EIS, Sec. 2.2.1, at 2-4.

[58] *See Friends of Animals*, 164 F.4th at 738.

statutory jurisdiction, authority, or limitations," or "without observance of **procedure required by law**."[59] Reclamation's analysis will not pass judicial scrutiny if Reclamation fails to identify its "statutory jurisdiction" and explain how it will implement the proposed action "in accordance with law" and observing all "procedures required by law."

Fifth, Reclamation admits that it is "**reasonably foreseeable**" that it will need to acquire **"certain new or modified legal authorities necessary to implement new interim guidelines**."[60] Given Reclamation's admission, NEPA makes it mandatory that such reasonably foreseeable legal authorities be disclosed in the Draft EIS.[61] While some uncertainty may exist regarding the precise timing and content of needed additional legal authorities, NEPA requires Reclamation to "utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking" based on available information known at this time.[62]

II. Reclamation's Failure to Include a Reasonably Foreseeable "Compact Call" Violates NEPA and the Secretary's Obligations Under the Law of the River

As mentioned above, a core NEPA requirement is that an EIS must evaluate any "**reasonably foreseeable**" effects of the proposed action, such as a Compact Call (also known as a "Compact Curtailment").[63] The term "Compact Call" refers to a potential request to the Secretary of the Interior from the Lower Basin States to order Reclamation and the Upper Basin States to deliver Colorado River water pursuant to the terms of the Compact in the event of any accumulated deficit at Lee Ferry under Articles III(c) and III(d).[64] Reclamation acknowledges in the Draft EIS that even without new legal authority or agreements, Reclamation has the "responsibility to operate the System through coordinated operations, including the ability to respond to exigent and emergency conditions, pursuant to applicable federal law, the Decree, contractual obligations, and other elements of the Law of the River."[65] Reclamation further

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[59] Administrative Procedure Act ("APA"), 5 U.S.C. § 706(2)(A), (C), (D).

[60] Draft EIS, Sec. 2.9, at 2-35 to 2-36 & n.26.

[61] *See id.*

[62] *See* NEPA § 102(A), 42 U.S.C. § 4332(2)(A) (emphasis added).

[63] *See id.* § 102(2)(C)(i),(ii), 42 U.S.C. § 4332(2)(C)(i),(ii).

[64] Specifically, Compact Article III(d) imposes the following mandatory delivery obligation: "The States of the Upper Division will not cause the flow of the river at Lee Ferry to be depleted below an aggregate of 75,000,000 acre-feet [75 maf] for any period of ten consecutive years reckoned in continuing progressive series beginning with the first day of October next succeeding the ratification of this compact."

[65] Draft EIS, Sec. 2.5, at 2-11.

acknowledges that its decisions are governed by the legal requirements comprising the "Law of the River," and that low flow conditions exacerbating compliance with Compact water delivery obligations appear all but certain.[66]

As explained above, Reclamation's unwillingness to disclose how it will apply the Law of the River to each alternative and modeled scenarios contradicts Reclamation's own admission that Reclamation itself is legally obligated to apply the Law of the River to future Colorado River operations.[67] Reclamation "kicks the can down the road," rather than doing the hard work needed to analyze and disclose planned operations to satisfy water delivery obligations after expiration of the current operational guidelines. NEPA forecloses such an approach.[68] This also puts the Lower Basin States in the difficult position of issuing a Compact Call in the near future, which is highly likely given the breakdown in negotiations between the Upper Basin and Lower Basin States.

One excuse that Reclamation implicitly provides for not directly addressing the risk of a Compact Call is that the Basin States "have **different legal positions** regarding" application of the Law of the River "to determine annual releases" during low flow conditions.[69] It is true that such disagreements between the Upper Basin and Lower Basin exist, but they do not excuse Reclamation from disclosing the effects of a reasonably foreseeable Compact Call.

The following provides one crucial example of differing interpretations of application of the Law of the River to long-term Colorado River management under low flow conditions. The LROC requires Reclamation to create annual plans of operation for the Colorado River Storage Project ("CRSP") units and Lake Mead. Such plans must include a determination, consistent with Colorado River Basin Project Act § 602(a)(3), as to how much water is needed in storage to satisfy future delivery requirements to Mexico and the Lower Basin States under 602(a)(1) and (2).[70] Importantly, the Upper Basin States have asserted that Section 602(a) "allow[s] the

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[66] *Id*., Sec. 1.8.2.1, at 1-13 to 1-16; *supra* § I.A. at pp. 7-8.

[67] *Supra* discussion at § I.

[68] *See Methow Valley Citizens Council*, 490 U.S. at 349 ("NEPA ensures that important effects will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast.").

[69] Draft EIS, Secs. 2.4.2, 2.10, at 2-9, 2-38.

[70] The relevant statutory language provides: "In order to comply with and carry out the provisions of the Colorado River Compact [of 1922], the Upper Colorado River Basin Compact, and the Mexican Water Treaty, the Secretary shall propose criteria for the coordinated long-range operation of [the CRSP reservoirs and Lake Mead] . . . . **The criteria shall make provision for the storage of water in [CRSP Reservoirs] and releases of water from Lake Powell in the following listed order of priority:** (1) releases to supply one-half the deficiency described in

Upper Division States to continue to meet their obligations under the [Compact] without impairing their ability to consumptively use the waters of the Colorado River System apportioned to them in perpetuity by the Compact" notwithstanding the annual releases prioritized in 602(a)(1)-(2).[71] However, nothing in Section 602(a) or the LROC suggests the conditions under which less than 8.23 maf would be released each year for the Lower Basin and Mexico.[72]

In the reasonably foreseeable event of ongoing low-flow conditions, which Reclamation itself assumes is the case,[73] it is certain that Reclamation will be required to render its own interpretation of the Colorado River Basin Project Act and other elements of the Law of the River. As such, not only must Reclamation analyze the same for each alternative analysis, Reclamation must analyze how it will respond to a reasonably foreseeable Compact Call given that the Basin States are unlikely to reach a consensus approach.[74] The Lower Basin States have

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article III(c) of the Colorado River Compact, if any such deficiency exists and is chargeable to the States of the Upper Division . . . ; (2) releases to comply with article III(d) of the Colorado River Compact, less such quantities of water delivered into the Colorado River below Lee Ferry to the credit of the States of the Upper Division from other sources; and (3) **storage of water not required for the releases specified in clauses (1) and (2)** of this subsection **to the extent the Secretary . . . shall find this to be reasonably necessary to assure deliveries under clauses (1) and (2)** without impairment of annual consumptive uses in the upper basin pursuant to the Colorado River Compact: Provided, That water not so required to be stored shall be released from Lake Powell: (i) to the extent it can be reasonably applied in the States of the Lower Division to the uses specified in article III(e) of the Colorado River Compact [except when] the active storage in Lake Powell is less than the active storage in Lake Mead, (ii) to maintain, as nearly as practicable, active storage in Lake Mead equal to the active storage in Lake Powell . . . ." CRBPA § 602(a), 43 U.S.C. § 1552(a) (emphases added).

[71] *See* Letter from Upper Basin States to Reclamation, regarding "Reclamation's Consideration of 602(a) Storage in the No Action Alternative," at 1 (June 11, 2024).

[72] For more information regarding the disagreement between the Upper and Lower Basin States on this issue, see Lower Basin States' Letter to Reclamation regarding "Upper Division States' June 11, 2024 Letter Regarding 602(a) Storage Considerations in the No-Action Alternative" (June 25, 2024).

[73] *Supra* pp. 6-7 & § II.

[74] *See Save the Colorado v. U.S. Army Corps of Eng'rs*, No. 18-cv-03258, 2024 WL 4519201, at *14 n.24, 2024 U.S. Dist. LEXIS 189322 (D. Colo. Oct. 16, 2024) (In concluding that the agency violated NEPA for other reasons, the court stated that given the "last few decades of severe aridity . . . . it is perplexing . . . that the Corps dismissed the possibility of a [1922 Colorado River] compact call in its analysis of a proposed water management project.").

repeatedly submitted comments to Reclamation emphasizing the need to analyze the impacts of a Compact Call under each alternative and why a Compact Call is reasonably foreseeable.[75] To ensure a legally sufficient analysis of a reasonably foreseeable Compact Call, Nevada again requests that Reclamation include the following assumptions regarding a Compact Call in the analysis of each alternative other than the Lower Basin Alternative:

- **Required deliveries pursuant to Article III of the Compact**: The Compact requires the delivery of the following at Lee Ferry: 75 maf every 10 years, on a rolling basis, plus the Upper Basin States' share of the Mexico Treaty obligation.

- **Compact call by the Lower Division States**: As stated above, it is reasonably foreseeable that if deliveries at Lee Ferry fail to satisfy the Compact requirements, the Lower Basin States will make a Compact Call for delivery of the deficit.

- **Upper Basin curtailment or other reductions**: It is reasonably foreseeable that, in the event of a Compact Call, the Upper Basin States will take, or be compelled to take, the necessary steps to comply with the Compact requirements, whether through curtailment, demand management storage in Lake Powell, or voluntary conservation measures. If a particular alternative incorporates a demand management storage program in Lake Powell or other conservation measures, it would be appropriate to assume utilization of that program according to its terms. Otherwise, it should be assumed that the Upper Basin States will curtail users as necessary (i.e., implement reductions) to satisfy their obligation. The Lower Basin States would support modeling of curtailment consistent with the requirements of the 1948 Upper Colorado River Basin Compact and the 1922 Colorado River Compact.

- **Actions by the United States in management of federal reservoirs**: Congress directed Reclamation to operate all federal infrastructure, including federal reservoirs, consistently with the 1922 Colorado River Compact, and Section 602(a) of the Colorado River Basin Project Act directs the Secretary to manage Upper Basin federal reservoirs to prioritize releases for Compact compliance, second only to releases to satisfy the Treaty obligation to Mexico. The 1970 Long Range Operating Criteria provide for minimum annual releases of 8.23 maf to meet these priorities.

[75] *See* Letter from Lower Basin States to Doug Burgum, Secretary of the Interior, regarding "Perspectives from the Lower Basin States on the Colorado River Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead," Attachment 1, at 10-19 (Feb. 13, 2025); *see also* Letter from Lower Basin to Reclamation Commissioner regarding "Upper Division States' June 11, 2024 Letter Regarding 602(a) Storage Considerations in the No-Action Alternative" (June 25, 2024).

Given this, it is reasonably foreseeable the United States will need to comply with these and other related elements of the Law of the River in operating the reservoirs.

- **Actions needed in advance of a Compact Call**: In addition to releasing water from Upper Basin reservoirs in response to a Compact Call, we expect that the United States will take actions necessary to release water from those reservoirs in advance of a Compact Call. Recognizing that the existing environmental compliance, or even physical capacity, of the reservoirs may not permit single-year releases on the scale necessary to satisfy a Compact Call, the United States should prepare by moving water through the reservoirs in advance, to satisfy any potential, near-term Compact Call. These anticipatory measures will be particularly important considering the need to protect critical infrastructure.

Failing to address or include in its analysis the tools that Reclamation will use to meet Compact compliance, including managing releases from the upstream initial units and modeling Upper Basin reductions through curtailment—together with any meaningful look at the resulting Upper Basin social and environmental impacts—renders Reclamation's analysis unhelpful to stakeholders and in violation of NEPA and its obligations under the Law of the River.

III. Reclamation Has Proposed an Impermissibly Narrow Purpose and Need Statement

Every EIS must include "a statement of purpose and need."[76] For agency proposed actions, Congress's goals, as expressed "in the agency's statutory authorization to act, as well as in other congressional directives" must guide the purpose and need.[77] "Alternatives that do not accomplish the purpose of an action are not reasonable and need not be studied in detail by the agency."[78] For that reason, "an agency cannot define its objectives in unreasonably narrow terms" that would artificially constrain the consideration of alternatives.[79]

Reclamation's purpose and need is impermissibly narrow. Rather than embrace the full scope of Reclamation's charge to manage the Colorado River for domestic, agricultural, and other uses, including the implicit purpose and need to protect human health and safety through Colorado River management, Reclamation focuses solely on the purpose to "update and

[76] NEPA § 107(d), 42 U.S.C. § 4336a(d).

[77] *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 196 (D.C. Cir. 1991).

[78] *Citizens' Comm. to Save our Canyons v. U.S. Forest Serv.*, 297 F.3d 1012, 1031 (10th Cir. 2002) (citation omitted); NEPA, § 102, 42 U.S.C. § 4332(2)(C)(iii).

[79] *Cachil Dehe Band of Wintun Indians v. Zinke*, 889 F.3d 584, 606 (2018) (citing *City of Carmel-by-the-Sea v. U.S. Dep't of Transp*., 123 F.3d 1142, 1155 (9th Cir. 1997).

expand" the expiring 2007 Interim Guidelines to provide "greater predictability for water users," "additional mechanisms" for water conservation, storage and delivery, enhance opportunities for Basin Tribes to benefit from their water rights, and accommodate future growth in the Basin.[80] Similarly, the need is limited to coordinating reservoir operations, replacing the expiring 2007 Interim Guidelines, and advancing more "robust" operational guidelines that meet stakeholder issues of concern, including those of the Basin Tribes.[81]

By limiting its view to only updating the 2007 Interim Guidelines with a more robust approach, Reclamation narrows the focus of alternatives, eliminating a number of "tools in the toolbox" for addressing drought conditions on the River, including the specific alternative proposed by the Lower Basin States in March 2024, and subsequently updated. Moreover, as discussed below, Reclamation should have included in the purpose and need (a) reparations of the Glen Canyon infrastructure limitations **and** (b) delivering the amounts required under the Article III(c) and (d) of the Compact to the Lower Basin of 8.23 maf of water per year and "not caus[ing] the flow of the river at the Lee Ferry Compact Point to be depleted below an aggregate of 75.0 maf for any period of ten consecutive years."[82]

At least two viable alternatives, i.e., an alternative to address the Glen Canyon Dam's infrastructure limitations and the proposed Lower Basin Alternative, were impermissibly eliminated based on Reclamation's artificially constrained purpose and need.

IV. Reclamation Failed to Consider a Long-Term Alternative to Address Glen Canyon Dam's Infrastructure Limitations

A. Reclamation's Failure to Address Glen Canyon Dam's Infrastructure Limitation Violates NEPA

Reclamation identifies an operational constraint "common to all alternatives" which limits releases from Lake Powell at elevations below 3,490 feet: "Releases from Glen Canyon Dam may be unable to achieve the specified annual release volume when Lake Powell is below elevation 3,490 feet due to **infrastructure constraints**" and "**limitations**," and the need to "**protect**" Glen Canyon Dam **"critical infrastructure**."[83]

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[80] Draft EIS, Sec. 1.3, at 1-7.

[81] *Id*. at 1-6.

[82] *Id*. at 1-16 (citing Compact, Article III).

[83] *E.g.*, Draft EIS, Sec. 2.10, at 2-38 (emphasis added); Draft EIS, Appx. A, Sec. A.6.1, at A-14 to A-15 ("Assumptions Common to All Alternatives" include "Infrastructure Constraints at Low Elevations," specifically "monthly releases can be constrained due to physical limitations at Glen Canyon Dam. Water can be released through the powerplant turbines until the pool

Elsewhere, Reclamation has explained the basis of the 3,490-elevation needed to address infrastructure limitations. Specifically, in April 2023, Reclamation conducted a "High Flow Experiment" ("HFE") release to rebuild beaches and sandbars in the Colorado River. Thereafter, Reclamation discovered damage in the Glen Canyon Dam "river outlet works" (also known as "bypass tubes").[84] The river outlet works consist of four steel pipes that move water from Lake Powell directly downstream into the Colorado River, bypassing the hydropower generating units. Reclamation explained that the river outlet works are the "only means for releasing water below elevation 3,490 ft" because "[w]ater cannot be released from the spillways below elevation 3,648 ft, nor through the penstocks below elevation 3,490 ft. Water can theoretically be released from the outlet works down to elevation **3,370 ft**, which is the intake invert and dead pool elevation."[85]

On March 26, 2024, Reclamation released a "Technical Decision Memorandum," explaining that the April 2023 release and other HFE releases in 1996, 2004, 2008, 2012, 2013, 2014, 2016, 2018, and 2023 from the river outlet works, combined with flood control releases in 1984-1987 had over time damaged the original coal tar enamel lining as a result of "cavitation."[86] Reclamation further explained in the Technical Decision Memorandum that it planned to replace the original coal tar enamel lining with a "solvent borne epoxy" at a cost of $8.9 million from the Bipartisan Infrastructure Law.[87] Importantly, Reclamation explained that the removal and replacement of the lining of the river outlet works was a short-term fix, not a long-term solution for ensuring "continuous long-term operation" of Glen Canyon Dam:

> [T]here is concern with using the outlet works to provide long-term releases, particularly at high flows . . . . In order to achieve a high level of confidence for continuous long-term operation of the

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elevation drops below 3,490 feet. Once Lake Powell is below 3,490 feet, releases are made through four river outlet works. The capacity of the river outlet works varies with the elevation of Lake Powell; the higher the pool elevation, the higher the potential release through the river outlet works . . . . For modeling purposes, three out of four river outlet works are assumed to be available for use at any given time; this is because of the need for periodic inspections and any associated maintenance activities.").

[84] Reclamation, Press Release, Glen Canyon Dam begins relining project as part of the President's Investing in America agenda (Sep. 3, 2024), https://www.usbr.gov/newsroom/news-release/4946.

[85] Reclamation, *Technical Decision Memorandum: Establishment of Interim Operating Guidance for Glen Canyon Dam during Low Reservoir Levels at Lake Powell*, at 3-4 (Mar. 26, 2024) (emphasis added) ("Technical Decision Memorandum").

[86] *Id*. at 6.

[87] *Id*. at 4; Reclamation Press Release, *supra* note 84.

> outlet works, a **major overhaul or replacement of the hollow-jet valves should be considered . . . .**A value planning study is currently planned to inform whether to refurbish or replace the hollow-jet valve hydraulic operating system.[88]

On September 3, 2024, Reclamation reiterated in a press release that the relining project will not address the risks to Glen Canyon Dam from cavitation: "While relining the outlets won't prevent the risk of additional cavitation when operating at low reservoir levels, Reclamation is working on reducing that risk through the recent development of interim operating guidance for the outlets and additional analyses."[89]

The Draft EIS elaborates on the Glen Canyon Dam infrastructure limitation as follows:

- Glen Canyon Dam was not envisioned to operate below minimum power pool (elevation 3,490 feet). Below this elevation, water cannot be released through the penstocks and must instead be released through the jet tubes at the end of the river outlet works. **Infrastructure concerns associated with extended operations through the river outlet works include damage to the outlet works pipes at low reservoir elevations**, erosion at the downstream base of the dam from outlet works operation, and the potential for additional unknown issues from operating the outlet works for extended periods. Any one of these factors could compromise the safety and stability of Glen Canyon Dam and **affect the ability to meet critical downstream water supply needs**.[90]

- Should elevations drop below 3,490 feet, routine operations of Glen Canyon Dam would be discontinued, and hydropower can no longer be produced. Releases can still be made via the river outlet works down to elevation 3,370 feet (corresponding to dead pool), at which point water can no longer be delivered downstream. However, the outlet works

[88] *Id*. at 7 & n. 4 (emphasis added).

[89] Reclamation Press Release, *supra* note 84.

[90] Draft EIS, Sec. 1.8.4.1, at 1-22 (emphases added).

> are **not designed nor intended for long-term use at low reservoir levels** (Reclamation 2024a).[91]

In addition, the Draft EIS Technical Appendix 15 states:

> Four, 96-inch steel pipes comprise the river outlet works at a centerline elevation of 3,374 feet. The outlets have a maximum combined capacity of 15,000 cubic feet per second (cfs) at elevation 3,500 feet. Below 3,500 feet the capacity deceases. Below minimum power pool, the outlet works are the sole means of releasing water. An annual release of 8.23 maf equates to a continuous flow of up to 11,368 cfs. With all four outlets operational, this release can be maintained down to approximately elevation 3,440 feet, however, operations and maintenance constraints may limit these releases or the elevation. Since the construction of Glen Canyon Dam, the river outlet works are typically reserved for flood control, HFEs, augmenting powerplant and spillway discharges, or for periods when the powerplant is not operating.[92]

Draft EIS Technical Appendix 15 further states:

> Maintenance tasks for the river outlet works include lining repairs and hollow-jet valve maintenance. The interior of the river outlet works was originally lined with coal tar enamel. Relining of the river outlet works with solvent borne epoxy began in the fall of 2024. The fabrication of the river outlet works hollow-jet valves dates back to the original construction of the dam, with no rehabilitation since that time. In 2023, an inspection of the outlet works found that to continue long-term operation of the outlet works, **major repairs or replacement of the hollow-jet valves should be considered**, as well as increasing the frequency of regular operation and maintenance tasks. River outlet works conduits were relined between 2024 and 2025. **Refurbishment or replacement of the hollow jet valves is in the planning stages**.[93]

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[91] *Id*., Sec. 3.3.1, at 3-25 (emphases added).

[92] Draft EIS, Tech. Appx. 15, at 15-5 (emphases added).

[93] *Id*. at 15-5 to 15-6 (emphases added).

Notwithstanding the above, Reclamation provides no quantification of sustainable outlet capacity as Lake Powell drops, no wear/failure risk analysis for frequent use, no contingency if some aspect of the dam must be taken out of service, and no discussion or acknowledgement of Reclamation obligations to make necessary repairs and modifications. Reclamation's approach to addressing the Glen Canyon Dam infrastructure limitations caused by damage to the river outlet works violates NEPA for the following reasons.

First, Reclamation does not include remedying the Glen Canyon Dam infrastructure limitations in the statement of "Purpose and Need" contained in the October 2023 Scoping Report, January 2025 Alternatives Report, or in the Draft EIS.[94] **However, Reclamation elevates maintaining the Lake Powell elevation above 3,490 feet to protect "Glen Canyon Dam infrastructure" to the highest de facto purpose of the proposed action**. Reclamation imposes this constraint on all the action alternatives and the no action alternative without including any alternative which provides a long-term design, reparation, or other solution to allow long-term use of the river outlet works at below the 3,490 ft elevation to deliver water to the Lower Basin at low flow conditions. By not including an action alternative that resolves Glen Canyon infrastructure limitations, Reclamation impermissibly limits the range of reasonable alternatives.[95]

Second, as indicated above, Reclamation acknowledges that it is currently considering alternatives to eliminate the infrastructure limitation in a "value planning study" outside the NEPA process to ensure a "high level of confidence for continuous long-term operation of the outlet works" by overhauling or replacing the hollow-jet valves and other possible solutions (which may also include reengineering the dam or routing water through bypass tunnels).[96] A central purpose of the Draft EIS is to evaluate "additional mechanisms for the conservation, storage, and delivery of water supplies in Colorado River reservoirs," including "a range of operational alternatives for post-2026 reservoir management."[97] Reclamation further purports to evaluate "additional measures to protect critical infrastructure at Glen Canyon Dam including

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[94] *See Scoping Report for the Post-2026 Colorado River Reservoir Operations* § 5.2, at 60-61 (Oct. 2023) available at https://www.usbr.gov/ColoradoRiverBasin/documents/post2026/scoping/Post2026Operations_ScopingReport_October2023_508.pdf; *see also* Alternatives Report § 5, at 6-7; Draft EIS, Sec. 1.3, at 1-6 to 1-7.

[95] *See*, *e.g.*, *Env't Def. Ctr. v. Bureau of Ocean Energy Mgmt.*, 36 F.4th 850, 877 (9th Cir. 2022) (agencies fail to meet their NEPA obligations when they do not "give full and meaningful consideration to all reasonable alternatives," including the reasonable alternatives presented by stakeholders).

[96] *See* Reclamation, Technical Decision Memorandum, *supra* note 85.

[97] Draft EIS, Secs. 1.1, 1.3, at 1-2, 1-6 to 1-7.

further reductions to releases from Lake Powell and additional use of the CRSP Upper Initial Units."[98] Yet, Reclamation inexplicably fails to address the most obvious "measure" as part of the NEPA analysis, i.e., to repair the infrastructure limitations caused by river outlet works damage. Addressing the infrastructure limitations may be the one long-term measure that would best achieve operation and management improvements to the Glen Canyon Dam. Accordingly, Reclamation in this NEPA process must evaluate the impacts of infrastructure repairs, and modifications and enhancements at Glen Canyon Dam, including overhauling or replacing the hollow-jet valves and other possible solutions, which Reclamation acknowledges are feasible.[99]

Third, it is unclear whether Reclamation is relying on a NEPA categorical exclusion to separately evaluate long-term repairs, modifications, and enhancements to the Glen Canyon Dam. Reclamation has a legal obligation to maintain federal water delivery infrastructure in good repair and operation, and no categorical exclusion permits Reclamation to ignore NEPA compliance with respect to the evaluation and implementation of major reparations of federal infrastructure that have significant consequences to downstream users.[100] Moreover, separately evaluating infrastructure repairs, modifications and enhancements in a separate planning process to the Glen Canyon Dam (i.e., the "value planning study") contravenes the NEPA requirement that "[t]o the fullest extent possible, bureaus will prepare environmental documents or other NEPA compliance documents concurrently with and integrated with analyses and related surveys and studies required by other Federal statutes and regulations."[101] Moreover, repairing the Glen Canyon Dam infrastructure to better operate the reservoir and deliver water consistent with the Law of the River constitutes a "connected action" that must be addressed in the instant NEPA process.[102]

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[98] *Id*., Sec. 2.5.2.1, at 2-15 & n. 17.

[99] NEPA's 2023 Amendments direct agencies to discuss in an EIS "a reasonable range of alternatives to the proposed action . . . that are technically and economically feasible, and meet the purpose and need of the proposal." NEPA § 102(2)(C)(iii), 42 U.S.C. § 4332(2)(C)(iii).

[100] No existing categorical exclusion would cover major repairs to Glen Canyon Dam. *See* 43 C.F.R. § 46.210 (2026) (list of DOI Categorical Exclusions); DOI NEPA Implementing Procedures, Appx. 2, § 14.5, at 92-95 (list of Reclamation Categorical Exclusions).

[101] DOI NEPA Implementing Procedures, § 3.8(a), at 20.

[102] *Id*. § 1.2(b)(1), at 4 ("In considering the potentially affected environment, the Responsible Official should consider, as appropriate to the proposed action, any connected actions, the scope of the affected area (national, regional, or local), reasonably foreseeable trends and planned actions within that area, and the affected area's natural and cultural resources."); *id*., § 6.1(g), at 23-24 ("*Connected action* means a separate Federal action within the authority of a Federal agency that is closely related to the proposed action and should be addressed in a

Addressing the Glen Canyon Dam infrastructure repair needed to allow water deliveries to the Lower Basin States during low Lake Powell elevations cannot be teased out of the "course of action" establishing rules for coordinated operation of Lakes Powell and Mead. Moreover, it is difficult to envision how significant repairs to Glen Canyon Dam to address uncorrected infrastructure limitations that directly impact how much water is released to the Lower Basin States during low-flow conditions do not constitute a "major federal action" subject to preparation of an EIS.[103]

Fourth, the reasonable range of alternatives requirement[104] requires that Reclamation evaluate alternative methods to protect the infrastructure at Glen Canyon Dam other than relying solely on reducing releases to the Lower Basin to maintain a hard elevation floor.[105] Such alternatives could include, for instance, short-term or long-

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single environmental document because the proposed agency action: (1) Automatically triggers the separate Federal action, which independently would require the preparation of additional environmental documents; (2) Cannot proceed unless the separate Federal action is taken previously or simultaneously; or (3) Is an interdependent part of a larger Federal action that includes a separate Federal action, which mutually depend on the larger Federal action for their justification.").

[103] NEPA § 102(2)(C)(A), 42 U.S.C. § 4332(2)(C)(iii); *see also San Luis & Delta-Mendota Water Auth. v. Jewell*, 747 F.3d 581, 646, 695 (9th Cir. 2014) ("[M]ajor federal actions significantly affecting the quality of the human environment" require an EIS, 42 U.S.C. § 4332(2)(C). Under applicable case law, when faced with operational or structural changes which "change the status quo" operation of an existing dam to reduce flows to downstream users "where there are substantial questions about whether [the changes] . . . may cause significant degradation of the human environment," NEPA requires that Reclamation consider such changes in an EIS) (remanding to Reclamation to prepare an EIS to evaluate changes in a dam's operation that "reduce the flow rate . . . in times of less precipitation"), *aff'g Delta Smelt Consol. Cases v. Salazar*, 686 F. Supp. 2d 1026, 1030, (E.D. Cal. 2009) (holding that "impact of coordinated operations of the Central Valley Project" in a manner that changed the "water delivery operations . . . to restrict project water flows . . . substantially alters the status quo in the Projects' operations" requiring Reclamation to consider such changes).

[104] *See Supra* discussion at § III.

[105] *See 'Ilio'ulaokalani Coalition v. Rumsfeld*, 464 F.3d 1083, 1098 (9th Cir. 2006) ("When the proposed action is an integral part of a coordinated plan to deal with a broad problem, the range of alternatives that must be evaluated is broadened.") (cleaned up); *Friends of Yosemite v. Kempthorne*, 520 F.3d 1024, 1039 (9th Cir. 2007) (agency violated NEPA because the "the action alternatives were not varied enough to allow for a real, informed choice"); *Alaska Wilderness Recreation & Tourism Ass'n v. Morrison*, 67 F.3d 723, 729 (9th Cir. 1995) ("An agency

term repairs or modification of the infrastructure at Glen Canyon Dam, conservation or curtailment in the Upper Basin, revised operation of federal infrastructure upstream of Lake Powell, or operational regimes such as proposed in the Lower Basin Alternative—that, assuming Reclamation adheres to the Law of the River, would both protect the infrastructure at Lake Powell and provide legally sufficient deliveries to the Lower Basin.[106] Proceeding on the basis of a mistaken or invalid assumption—namely that Reclamation can maintain Lake Powell above elevation 3,490 feet solely by reducing releases from Glen Canyon Dam—would invalidate Reclamation's alternatives analysis in the EIS.

Fifth, as explained below, Reclamation's apparent top priority of maintaining Lake Powell's elevation above 3,490 feet at the sole expense of the Lower Basin directly contravenes numerous foundational elements of the Law of the River including the Compact, the 1944 Treaty with Mexico, LROC, and the Colorado River Basin Project Act Section 602.[107]

Accordingly, for the reasons stated above, Reclamation's failure to consider the Glen Canyon Dam infrastructure limitations and potential reparations of the same as part of the alternatives analysis violates NEPA and the Law of the River.

B. Reclamation Must Pursue An Engineering Solution Without Burdening Lower Basin Water Users

As indicated above, Reclamation repeatedly acknowledges that during low flow conditions, releases from Glen Canyon Dam may not satisfy water delivery requirements in order to protect Glen Canyon's damaged and impaired river outlet works. For example, Reclamation explains that the Enhanced Coordination Alternative:

> **seeks to protect critical infrastructure** while benefitting key resources (such as environmental, hydropower, and recreation) through an approach to distributing storage between Lake Powell and Lake Mead that enhances the reservoirs' abilities to support the Basin. It applies a pro rata Lower Basin shortage distribution to evaluate the potential impacts of distributing reductions

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must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action, and sufficient to permit a reasoned choice.") (cleaned up).

[106] *See infra* p. 36.

[107] *See infra* § II, VI and accompanying text.

> among all mainstream lower Colorado River water users in Arizona, Nevada, and California.[108]

While that alternative encourages use of conservation pools in both reservoirs—"[w]ater conserved by Upper Basin users would be stored in a pool in Lake Powell that can reach a maximum volume of 2.0 maf" and "[w]ater held in the Lake Powell conservation pool would be converted to system water and combined with Lower Basin shortages to provide system benefits based on the shortage curve"—Reclamation makes clear that "the Lower Basin would take the balance of shortages" presumably on a "pro rata Lower Basin shortage distribution" basis.[109]

Nothing in this alternative or other alternatives includes mechanisms in which the Lower Basin States and Upper Basin states both bear the burden of reduced deliveries and consumptive uses. Such an approach is not only grossly inequitable but violates the Compact for the reasons stated above. Nor does Reclamation provide any analysis of low flow operational outcomes utilizing a repaired river outlet works to ensure required deliveries to the Lower Basin States during low flow conditions after exhausting other "proactive conservation and water user flexibility" storage and non-system mechanisms.[110] Rather, Reclamation assumes as a given that the Lower Basin States alone must suffer delivery shortages.

In summary, Reclamation asserts that the river outlet works cannot be used for "extended periods," but never analyzes the impacts nor alternatives to the infrastructure limitation, other than to say it is studying the issue. Reclamation fails to consider utilizing the bypass tubes for short periods during low flow conditions to meet the delivery requirements to the Lower Basin States. Reclamation further ignores that the Compact expressly makes hydro pool levels subservient to domestic and agricultural uses.

V. Reclamation Violated NEPA By Failing to Consider and Carry Forward the Lower Basin States Alternative

NEPA requires that an agency include in its environmental analysis "a reasonable range of alternatives to the proposed agency action . . . that are technically and economically feasible, and meet the purpose and need of the proposal."[111] DOI's Handbook of NEPA Implementing Procedures clarifies that Reclamation must include both an analysis of adverse environmental effects as well as "any positive or beneficial environmental impacts of implementing the

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[108] Draft EIS, Secs. 2.5.4.2, 2.6, at 2-16 (emphasis added).

[109] *Id.*, Sec. 2.6, at 2-16 to 2-21.

[110] *Id.*, Sec. 2.6.3, at 2-21.

[111] NEPA § 102(2)(C)(iii), 42 U.S.C. § 4332(2)(C)(iii).

proposed action or any reasonable alternatives."[112] Moreover, Reclamation must consider an alternative that stakeholders show to be reasonable and distinguishable from other alternatives considered. Indeed, "[t]he existence of a **viable but unexamined alternative** renders the environmental review conducted under NEPA inadequate," especially when the alternative is proposed by stakeholders to be impacted by the proposed action.[113]

A. The Lower Basin States Submitted a Detailed, Viable Alternative that Reclamation Ignored

The Lower Basin Alternative takes a science-based approach to Colorado River management, as explained in the Lower Basin States' letter to Reclamation dated March 6, 2024:

> The Lower Basin Alternative shifts away from the reliance in the 2007 Interim Guidelines on the 24-Month Study forecasts and elevations in Lake Powell and Lake Mead to determine reservoir releases and Lower Basin shortages. This [Lower Basin] Alternative instead primarily uses actual hydrology and total system contents—a recognition that, whatever the elevation of a particular reservoir in the system may be, sustainable management must be focused on contents that are actually available in the system as a whole. "Total system contents" includes the contents of Flaming Gorge, Blue Mesa, Navajo, Powell, Mead, Mohave, and Havasu. In addition to more holistically managing the system, moving away from forecasts and reservoir elevations and instead relying on actual hydrology and system contents should reduce disagreements among and between the Basins that have resulted from reliance on Lake

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[112] DOI NEPA Implementing Procedures, § 2.3(a)(2)-(3), at 13.

[113] *Env't Def. Ctr. v. Bureau of Ocean Energy Mgmt.*, 36 F.4th 850, 877 (9th Cir. 2022) (emphasis added; cleaned up) (invalidating an environmental assessment for failing to consider stakeholder-proposed alternatives); *see also High Country Conservation Advocates v. U.S. Forest Serv.*, 951 F.3d 1217, 1224-27 (10th Cir. 2020) (invalidating an environmental impact statement for failing to consider a stakeholder-proposed alternative that met the Forest Service's statutory mandate, its objectives for the project, and was significantly distinguishable from the alternatives considered); *Morongo Band of Mission Indians v. FAA*, 161 F.3d 569, 576 (9th Cir. 1998) (A "specific, detailed counterproposal that ha[s] a chance of success" must be considered by agency); *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 711 (10th Cir. 2009) (an agency must evaluate a commenter-proposed alternative that "falls within the agency's statutory mandate" and meets "the agency's objectives for a particular project.").

> Powell and Lake Mead elevations and 24-Month Study forecasts in the past.[114]

Furthermore, the Lower Basin Alternative addresses "the impacts of drought and climate change through a holistic and sustainable approach to the coordinated operations of Lake Powell and Lake Mead that improves predictability for water users" by:[115]

- **Addressing the structural deficit in the Lower Basin.** It includes reductions from Lower Basin state apportionments and deliveries to Mexico by 1.5 maf (static reduction) under most system conditions. The static reduction is larger than the structural deficit in the Lower Basin regardless of the various ways that the structural deficit may be calculated.[116]

- **Operating the reservoirs based on system contents rather than elevations at Lake Powell and Lake Mead.** It shifts to a more holistic, systemwide approach in which operations are dictated by overall system conditions instead of forecasts and elevations in the two main reservoirs.

- **Sharing water use reductions broadly.** It recognizes the need to make water use reductions from state apportionments under most system conditions and shares those reductions predictably among the Lower Basin water users and Mexico. Under the most critical system conditions, the Lower Basin Alternative shares water use reductions between the Upper Basin and Lower Basin including Mexico.

- **Including provisions for storage and delivery of stored water.** It includes opportunities for storage and augmentation that will encourage innovation and investment.[117]

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[114] Lower Basin States Alternatives Letter to Reclamation, at 3-4 (Mar. 6, 2024).

[115] *Id.* at 2.

[116] *See generally* Reclamation, Lower Colorado River Mainstream Evaporation and Riparian Evapotranspiration Losses Report (Dec. 2023), available at https://www.usbr.gov/lc/region/g4000/4200Rpts/LCRBEvapReport/LCRBEvapReport.pdf.

[117] *See id*. at 2-3. Originally, the Lower Basin Alternative included a Powell to Mead release regime designed to reflect Upper Basin "hydrologic shortage" by varying the release in part based upon use volumes in the Upper Basin. As discussed infra, the Lower Basin altered the approach to ensure that Lake Powell operates above critical elevations in a broader range of hydrologies.

B. Reclamation's Stated Reasons for Not Considering and Carrying Forward the Lower Basin Alternative Lack Merit

As explained above, despite the Lower Basin States' repeated efforts to help Reclamation understand the environmental and long-term operational benefits and advantages of the Lower Basin Alternative, Reclamation has steadfastly failed to consider and include the Lower Basin Alternative in its alternatives analysis. More recently, Reclamation includes the following explanation regarding its omission of any serious consideration of the Lower Basin Alternative:

> Upon receiving the revised Upper Division and Lower Division States proposals, Reclamation performed preliminary modeling and concluded that the revisions did not sufficiently address the lack of an appropriate basis for the comprehensive and coordinated operations of Lake Powell and Lake Mead that, based on preliminary modeling results, was found lacking in the original proposals.[118]

The above explanation fails to provide a sufficient and documented basis for not including detailed analysis of the entire Lower Basin Alternative in the Draft EIS.

First, Reclamation provides no evidence or discussion in either the text of the Draft EIS or in the attached technical reports of "preliminary modeling" indicating that the Lower Basin Alternative failed to meet the purpose and need of the proposed action. This is particularly troubling given the degree to which Reclamation relies on modeling to support its alternatives analysis and provides the public with web-based modeling tools to better understand the various options.[119] Yet, when repeatedly asked to conduct modeling and analysis of the Lower Basin Alternative, Reclamation failed to do so in a transparent fashion.

Second, had Reclamation actually applied its models to the Lower Basin Alternative, Reclamation would have concluded, as Nevada did, that the Lower Basin Alternative was viable and arguably satisfied the purpose and need in a more sustainable and scientifically-based approach that solves many of the deficiencies of the

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[118] Draft EIS, Sec. 2.1, at 2-2.

[119] *See id*., Sec. 2.1, at 2-1 ("To facilitate public understanding and input on the alternatives, since December 2023, Reclamation has developed and hosted the Post-2026 Operations Exploration Web Tool, an online platform that allows stakeholders, interested parties and the public to independently or collaboratively design, model and explore a wide range of creative operational strategies. Use of the platform is not considered formal input to the Post-2026 Process, but insights from the 500-plus operational strategies entered into the platform were used to inform alternatives.").

alternatives Reclamation carried forward in the Draft EIS. Specifically, attached hereto is a "Technical Memorandum – Lower Basin Alternative," prepared by SNWA hydrological modeling experts which set forth the following findings:

- "The Lower Basin Alternative performs as well as, and in some cases better than, the [Draft EIS] alternatives in meeting the stated purpose and need and should have been explicitly represented as a [Draft] EIS alternative."

- "The simulated near-term system conditions are highly sensitive to the forecast used to set the starting modeling conditions. What is considered favorable or less favorable operating conditions for Lake Powell and Lake Mead are largely shaped by the initial reservoir conditions used in the analysis, and relying on an outdated forecast to initialize the model does not accurately reflect reasonably foreseeable system conditions and understates the near-term resource risks associated with reservoir elevations."[120]

Third, in each alternative carried forward in the Draft EIS, Reclamation assumes the need to indefinitely (or at least for the foreseeable future) maintain the power pool elevation of 3,490 feet in Lake Powell to protect Glen Canyon Dam infrastructure. But that assumption is mistaken. The Lower Basin Alternative, particularly as amended, provides adequate protection of Lake Powell elevations.[121] Moreover, as explained, Reclamation must evaluate alternative methods to protect the infrastructure at Glen Canyon Dam other than relying solely on reducing releases to the Lower Basin to maintain a hard elevation floor.[122]

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[120] SNWA, "Technical Memorandum – Lower Basin Alternative," at 1 (Feb. 26, 2026).

[121] *See, e.g.*, Lower Basin States Alternatives Letter (Mar. 6, 2024), at 3 ("storage [opportunities provided by the alternative] will help to protect infrastructure and habitat and provide predictability for water users"); 6-7 ("[B]ased on our preliminary reviews, the Lower Basin Alternative is highly effective at keeping Lake Powell above critical elevations. Even during drier hydrologies, when Lake Powell's elevation may temporarily fall below 3500 feet, the use of total system contents . . . improves flexibility to protect critical infrastructure by enabling the movement of water through the system as necessary for infrastructure protection and environmental flows while satisfying water delivery requirements and Compact obligations."); email correspondence from Tom Buschatzke, *supra* n.13 (providing modification to Lower Basin Alternative to provide "refinements to the releases from Lake Powell" for "Lake Powell release[s] to avoid critical elevations").

[122] *Supra* discussion at § IV.

Fourth, notwithstanding the deficiencies in the alternatives contained in the Draft EIS and the fact that Reclamation declined to consider and carry forward the Lower Basin Alternative, we believe that between now and issuance of the Final EIS, Reclamation could adopt the attached "Nevada Proposed Approach to Short and Long-Term Operations," which (like the Lower Basin Alternative) better meets the stated purpose and need of the proposed action than the alternatives advanced by Reclamation in the Draft EIS.[123]

VI. The Draft EIS Alternatives Analysis Includes Other Legal Deficiencies in Violation of NEPA Which are Particularly Detrimental Nevada's Interests

A. Reclamation Failed to Include a Legally Sufficient No-Action Alternative

The no-action alternative "sets useful reference against which the effects of the proposed action (and any action alternatives) would be measured" and "the reasonably foreseeable environmental trends and planned actions as they would occur should the bureau not implement the proposed action or any action alternatives."[124] The no action alternative must provide "a focused scientific and analytic comparison of the proposed action and alternatives."[125] It also "represents a continuation of the affected environment absent the Federal action under consideration."[126] The Draft EIS's no-action alternative fails to achieve these objectives.

The Draft EIS explains the following regarding the no-action alternative:

- "Reclamation based the No Action Alternative in this Draft EIS on the operating guidance that was in place before the adoption of the 2007 Interim Guidelines ROD (2007 ROD) to provide a reasonable representation of how the system would continue to operate if no additional operating guidelines were adopted."[127]

- "Before the 2007 Interim Guidelines were in place, the basis for operations was the LROC, under which the Secretary made a number of determinations at the beginning of each operating year through the development and execution of the AOP, including the water supply available to users in the Lower Basin and the annual release from Lake Powell. The LROC does not include specific guidelines

[123] SNWA, "Nevada Proposed Approach to Short and Long-Term Operations" (Feb. 26, 2026).

[124] DOI NEPA Implementing Procedures, Appx. 1, at 39.

[125] *Id*. at 40.

[126] *Id*. at 41.

[127] Draft EIS, Sec. 2.4, at 2-6.

for such determinations, so the outcome of the annual determination in any particular year in the future could not be precisely known."[128]

- "[T]he Secretary makes a determination each year as to whether the consumptive use requirements of mainstream users in the Lower Division states will be met under a Normal, Surplus, or Shortage Condition. The LROC specify that the Secretary will consider all relevant factors in making a shortage determination and list some of the factors to be considered. However, there is no specific guidance as to exactly when, how, or to whom reductions in deliveries would be made. Therefore, **it is impossible to know exactly how the Secretary might make a shortage determination from year to year in the future**."[129]

- "The distribution of the shortages, summarized in Table 2-1, would be based on the interpretation of priority from the Consolidated Decree and CRBPA; not the distribution adopted in expiring guidelines . . . **Certain Lower Basin Colorado River water rights are "present perfected rights" or "PPRs," which the Consolidated** Decree quantified and defined as existing on June 25, 1929 (the **effective date of the BCPA). PPRs are the highest priority Colorado River water rights**."[130]

Even if we were to concur with Reclamation's decision to base the no-action alternative on the pre-2007 regulatory regime (i.e., application of the LROC and "present perfected rights"), we disagree that, for purposes of establishing a baseline, Reclamation can forego any disclosure of how the Secretary might make "shortage determinations." Lead agencies frequently must establish "snapshot in time" baseline conditions using rolling averages, bounded (upper and lower) limits, modeling, and other recognized approaches provided the technical assumptions are fully disclosed. But such assumptions must be consistent with an agency's transparent interpretations of its legal authority and applicable regulatory requirements.[131] Here, Reclamation has provided no transparency with respect to how

[128] *Id*.

[129] *Id*., Sec. 2.4.1.1, at 2-6 to 2-7 (emphasis added).

[130] *Id*. at 2-7 & n.8 (emphasis added).

[131] *See Great Basin Res. Watch v. BLM*, 844 F.3d 1095, 1101 (9th Cir. 2016) (An agency "may estimate baseline conditions using data from a similar area, computer modeling, or some other reasonable method" but "whatever method the agency uses, its assessment of baseline conditions must be based on accurate information and defensible reasoning.") (cleaned up).

Reclamation plans to apply the present perfected rights, which Reclamation concedes "are the highest priority Colorado River water rights."[132]

Reclamation introduces additional uncertainty regarding the no-action alternative: "While assumptions for adjustments to Lake Powell releases to forestall reaching physical elevation 3,490 feet have not been developed for this alternative, Reclamation maintains the **authority to modify operations to protect Glen Canyon Dam infrastructure**."[133] While Reclamation claims such authority, it asserts that it has not developed the "assumptions" needed for adjustments to Lake Powell releases to protect the Glen Canyon dam and forestall infrastructure damage.[134] Without setting forth the "assumptions" supporting the "adjustments" needed to protect the Glen Canyon Dam, and the nature and extent of its authority, the no-action alternative lacks the clarity and specificity needed to establish baseline operations during low flow conditions. Courts have invalidated no-action alternatives that failed to provide sufficient details, clarity, and transparency to establish a baseline from which to compare reasonable alternatives.[135]

Similarly, Reclamation fails to explain how, when, and under what circumstances it would make "shortage determinations" under its LROC authority. Reclamation acknowledges that LROC Article II(2) requires it to "maintain a minimum release of water from Lake Powell of 8.23 [maf]," but that the Lower and Upper Basin states "have **different legal positions** regarding how this LROC statement incorporates other Law of the River elements to determine annual releases. Reclamation also recognizes that variation in releases of water above and below the minimum objective release of 8.23 maf can, in **appropriate circumstances**, be adopted."[136] Yet, no where in its NEPA analysis does Reclamation explain what it believes are the "appropriate circumstances." Moreover, the fact that the basin states have different legal positions is irrelevant to the need for Reclamation to disclose the agency's own understanding

[132] Draft EIS, Sec. 2.4.1.1, at 2-7 & n.8 (emphasis added).

[133] *Id*., Sec. 2.4.2.3 at 2-10 (emphasis added).

[134] *Id*.

[135] *Friends of Yosemite Valley v. Scarlett*, 439 F. Supp. 2d 1074, 1105 (E.D. Cal. 2006) *aff'd*, *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1037-38 (9th Cir. 2008) (holding agency's no-action alternative invalid because agency improperly defined the baseline); *N.C. Wildlife Fed'n v. N.C. DOT*, 677 F.3d 596, 604-05 (4th Cir. 2012); *see also Great Basin Res. Watch v. BLM*, 844 F.3d 1095, 1101-04 (9th Cir. 2016) (baseline condition discussion).

[136] *Id.*, Sec. 2.4.2, at 2-9.

of its legal obligations under the no action alternative in the event of low flow conditions. Rather, Reclamation claims that "it is impossible to know."[137]

DOI's NEPA regulations require that the responsible bureau official ensure the "scientific integrity" of the NEPA analysis by "using reliable data and resources."[138] The preamble to DOI's NEPA regulations emphasizes the importance of doing so in connection with preparing the no action and other alternatives.[139] Courts have made clear that agencies cannot hide behind legal or scientific uncertainty, but must transparently disclose the technical and legal basis underlying the proposed action and the "no action" alternative.[140]

B. Reclamation's "Basic Coordination Alternative" Fails to Meet the Project's Purpose and Need

The Draft EIS explains that the "Basic Coordination Alternative" is "designed to be implementable without agreements among Basin water users regarding distributions of lower Colorado River mainstream shortages, storage and delivery of conserved water from system reservoirs, or other voluntary agreements . . . **under an increasingly broad range of potential future hydrologic conditions would be more challenging than under historical operations** and would result in a number of highly undesirable consequences for many users."[141]

We concur that given the decades-long megadrought trend, it is critical that Reclamation consider alternatives reflecting increasingly low flows. This reality is explicitly mentioned in the project purpose and need statement:

> [The] [i]mbalance between water supply and demand will be exacerbated by increasingly likely low-runoff conditions: The Basin is experiencing increased aridity due to climate variability, and **long-term drought and low-runoff conditions are expected in the future**. These conditions will exacerbate the now widely recognized **imbalance between water supply and demand in the Basin**. Robust and flexible guidelines are needed to manage the Colorado River system

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[137] *Id*., Sec. 2.4.1.1, at 2-6 to 2-7.

[138] 46 C.F.R. § 46.105(c).

[139] *See* 91 Fed. Reg. 8738, 8738-39 (Feb. 24, 2026) ("NEPA further mandates that federal agencies ensure the professional and scientific integrity of environmental documents; use reliable data and resources when carrying out NEPA; and study, develop, and describe technically and economically feasible **alternatives**.") (emphasis added).

[140] *See Lands Council v. U.S. Forest Serv.*, 395 F.3d 1019, 1032 (9th Cir. 2004) (NEPA requires up front disclosure of informational shortcomings).

[141] Draft EIS, Sec. 2.5, at 2-11 (emphasis added).

> and its resources under a broad range of potential future hydrologic conditions.[142]

The project purpose and need also acknowledges, as it must, that the expiring 2007 Interim Guidelines "are not robust enough to manage the system in a way that is sufficiently protective of the resources dependent on the Colorado River . . . . More robust and adaptive guidelines are needed for the efficient and sustainable management of the major mainstream Colorado River reservoirs and system resources."[143] Thus, much more must be done to manage the Colorado River system.

Notwithstanding the project purpose and need, and priority deliveries to the Lower Basin that Reclamation must honor, Reclamation admits that the Basic Coordination Alternative "may not provide adequate protection of critical infrastructure or the system and may be viable only in the short term given current reservoir conditions."[144] To remedy this situation, in the event the Basic Coordination Alternative is selected, Reclamation plans to "identify the conditions under which further action would be required, including adjustment of operations and prompt action to seek **additional authorities**, if needed."[145] Reclamation should have screened the Basic Coordination Alternative and explained why it was eliminated from detailed study given that Reclamation admits it is not likely to meet the project purpose and need.[146]

Reclamation admits that it has significant operational authority although the precise scope and parameters of which may not be entirely clear or may be debatable:

> [T]he Secretary has the vested authority and responsibility to operate the System through coordinated operations, including the ability to respond to exigent and emergency conditions, pursuant to applicable federal law, the Decree, contractual obligations, and other elements of the Law of the River. The full extent of Reclamation's operational authority has not been tested to date—either operationally or through legislative or judicial review. Accordingly, Reclamation's description of how this alternative would be implemented relies on legal, operational, and engineering judgment regarding future operations under a broad range of hydrologic conditions . . . . This alternative proposes that

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[142] *Id*., Sec. 1.3, at 1-6.

[143] *Id*.

[144] *Id*., Sec. 2.5, at 2-11.

[145] *Id*. at 2-11 to 2-12 (emphasis added).

[146] *See* DOI NEPA Implementing Procedures, § 2.3(a)(3), at 13.

> the Secretary may seek new authorities to implement additional measures to protect critically low elevations at Lake Mead including additional shortages to Lower Basin water users.[147]

However, the lack of case law delineating Reclamation's authority in no way reduces NEPA's requirement to adequately describe the authority and jurisdiction it does have to implement a reasonable range of alternatives. It may well be appropriate for Reclamation at a future date to request additional statutory or contractual authority to meet the project purpose and need in the long-term. But Reclamation cannot hide behind a "future" request for authority to fully comply with NEPA.[148]

Furthermore, Reclamation emphasizes the importance of the Basin States developing a consensus-based approach.[149] We agree that ideally the Basin States could have (and should have) reached a consensus approach for implementing enhanced conservation and allocation reductions. The Basin States have failed to do so. As a result, Reclamation should have provided an alternative that included mandatory conservation measures and reductions in consumptive uses under its existing authority as part of the Basic Coordination Alternative in order to meet the project purpose and need.

The most Reclamation appears to disclose regarding operations under this alternative during low flow conditions is the following: "If on October 1 Lake Powell is projected to fall below 3,500 feet within the upcoming WY, Reclamation would consider **additional measures** as necessary to protect critically low elevations, consistent with the Law of the River."[150] These "additional measures" remain undisclosed; however, they do not include "upper basin

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[147] DEIS, Sec. 2.5 at 2-11, 2-13 n.6.

[148] *Native Vill. of Point Hope v. Jewell*, 740 F.3d 489, 497-98 (9th Cir. 2014) ("NEPA is not designed to postpone analysis of an environmental consequence to the last possible moment. Rather, it is designed to require such analysis as soon as it can reasonably be done.") (citation omitted); *Half Moon Bay Fishermans' Mktg. Asso. v. Carlucci*, 857 F.2d 505, 508 (9th Cir. 1988) (disclosing information after EIS defeats NEPA's goal of encouraging public participation during the decision-making process).

[149] *See*, *e.g.*, Draft EIS, Sec. 2.2, at 2-3 ("Achieving a consensus-based approach to Basin reservoir operations has **proved critical to the long-term operating success of the Basin**. Given the importance of a consensus-based approach to operations in terms of the stability of the system, the Department will continue to pursue an agreement among various Basin entities.") (emphasis added).

[150] *Id*., Sec. 2.5.2.1, at 2-15 (emphasis added).

conservation" purportedly because such measures "would require agreements outside of Reclamation's control."[151]

Furthermore, Reclamation explains that: "The maximum shortage volume is set at a level estimated by Reclamation to ensure that an assumed minimum flow is available for infrastructure protection and delivery for municipal use by [Central Arizona Project] users and other Fourth Priority mainstem entitlement holders in Arizona when mainstream shortage is distributed by priority."[152] Reclamation should be more specific as to the quantity of Arizona water reserved in their shortage calculation for the Basic Coordination Alternative.

C. Reclamation Failed to Include an Alternative Consisting of Voluntary and Mandatory Conservation Measures and Reductions

Reclamation explains that the proposed action is intended to promote water conservation:

- "Approaches that include opportunities for **conservation**, augmentation, demand management, or other water management strategies."[153]

- "**Expanded and innovative use of conservation** is needed: Recognizing the anticipated future low-runoff conditions in the Basin, the Department has also determined a need for guidelines that provide Colorado River water users, including Basin Tribes, expanded opportunities to conserve, store, and take subsequent delivery of water in and from Lake Mead and/or Lake Powell. The guidelines should also support and integrate future efficiency improvements and opportunities for augmentation."[154]

- "The purpose for the proposed federal action is to . . . provide additional mechanisms for the conservation, storage, and delivery of water supplies."[155]

Yet, Reclamation misses the opportunity to fully evaluate voluntary and mandatory enhanced conservation efforts. And it fails to sufficiently describe specific legal authority to impose mandatory conservation measures or incentivize voluntary conservation measures on the Basin States and Tribes. These points are discussed below.

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[151] *Id*., Sec. 2.5.4.1, at 2-16.

[152] *Id.*, Sec. 2.5.1.1, at 2-12.

[153] *Id*., Sec. 1.2, at 1-5.

[154] *Id*., Sec. 1.3, at 1-6.

[155] *Id*., Sec. 1.3, at 1-7.

First, notwithstanding the stated purpose to promote water conservation measures, Reclamation contradicts itself by stating that it does not consider Upper Basin conservation measures in the NEPA analysis:

> With respect to Upper Basin conservation, the nexus to the proposed federal action is the storage and delivery of that conserved water in Lake Powell. The effects of this storage in and delivery from Lake Powell are within the scope of the EIS, while specific activities that may be undertaken in the Upper Basin to generate the conserved water are not within the scope of this EIS. Any such activities are unknown at this time and will not necessarily require federal decision making. Any federal decisions associated with these conservation activities will be assessed outside of this EIS.[156]

Reclamation provides no reason why it could not have requested information from the Upper Basin States documenting voluntary and mandatory conservation efforts currently underway and those planned for the future. If the Upper Basin States had nothing to report or refused to cooperate, that fact should have been noted in the analysis. But because the Draft EIS is not analyzing voluntary Upper Basin States conservation efforts/activities, this purpose of promoting water conservation is not satisfied under any of the alternatives.

A comprehensive conservation analysis would evaluate (a) existing and future voluntary conservation measures, (b) future incentivized water conservation measures, (c) mandatory water conservation measures, and (d) water conservation measures resulting from reductions in consumptive uses. Reclamation considers conservation efforts and programs underway in the Lower Basin but not the Upper Basin, and it provides no explanation for the disparate treatment of the two basins.[157] Reclamation's failure is particularly troubling given that Reclamation admits that failure to incorporate conservation measures in the modeling affects

[156] *Id*., Sec. 1.5, at 1-9.

[157] *E.g.*, ICS Creation, DCP cuts (2019), 500K Plan, 1.5M Plan.

the impacts analysis during low flow conditions.[158] The time to evaluate conservation measures is now, not in the future when the Upper Basin States warm to the idea or the well runs dry.[159]

Second, Reclamation states that a purpose of the proposed action is to "[p]rovide Colorado River water users a greater degree of **predictability** with respect to annual water availability in future years under anticipated increasing variability, low runoff, and low reservoir conditions."[160] "Predictability" increases when the public knows the specific conservation programs/demand-reduction strategies that will be implemented. In contrast, Reclamation's failure to include an analysis of conservation measures gives Upper Basin States ongoing license to not implement verifiable water conservation measures and strategies.

Third, the Draft EIS describes the opportunity for Tribes to store their unused water in the Lake Powell and Lake Mead in conservation pools or use conserved water as an Upper Basin conservation water volume.[161] Reclamation should analyze the significant legal and technical questions regarding the availability of unused Tribal water for these purposes, including the extent to which previous beneficial use of such water has been measured and reported to ensure that credited volumes actually benefit the system and don't represent a mere accounting of paper water rights. Reclamation should prepare supplemental analyses excluding unused Tribal water in the event of legal impediments so that the impacts of this element may be presented to the public and used in making a reasonable choice among alternatives.

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[158] "The [Shortage Allocation Model] used to inform the [decision making under deep uncertainty] analysis **do not incorporate water management measures such as conservation programs or demand-reduction strategies**. These measures do not change entitlement amounts or shortages; however, as described in the affected environment section, **conservation programs and other management strategies can influence domestic water demand and help mitigate the operational pressures associated with shortage, uncertain supply, and population growth**." *See* Draft EIS, Tech. Appx. 17, Sec. TA 17.2.3, at 17-29 (emphasis added).

[159] *See generally Grand Canyon Tr. v. Bureau of Reclamation*, 691 F.3d 1008, 1022 (9th Cir. 2012) ("The time for an agency to give a hard look at environmental consequences, and the opportunity for serious NEPA litigation on whether alternatives were adequately considered . . . [is when] an agency establishes operating criteria for a dam, or embarks on some significant shift of direction in operating policy.").

[160] Draft EIS, Executive Summary, Sec. ES 1.1, at ES-5 (emphasis added).

[161] Draft EIS, Sec. 2.6.3.3, at 2-22; Sec. 2.6.4.1., at 2-23; Sec. 2.8.4.1, at 2-35; Appx. B, Sec. B.6.1.2, at B-20).

Fourth, Reclamation states in its modeling assumptions that "[a]t low lake levels, the storage credits in Lake Powell may exceed the total storage in Lake Powell."[162] More information is needed on how this could occur and how it would affect releases from Lake Powell. Sufficient releases to satisfy the Compact should not be hindered by any Powell conservation water because the Lake exists most prominently to satisfy the Treaty with Mexico and the Compact.

D. Reclamation Failed to Identify a Preferred Alternative in the Draft EIS

Reclamation "has not identified a Preferred Alternative in this Draft EIS."[163] Reclamation's decision not to identify a preferred alternative in the Draft EIS is inconsistent with NEPA and the Law of the River. As a general matter, NEPA does not impose the statutory requirement that the lead federal agency identify a "preferred alternative" in the Draft EIS. However, prior to their rescission, the Council on Environmental Quality ("CEQ") rules required that agencies identify in the draft NEPA document the agency's preferred alternative if one existed unless another law prohibited such a preference.[164] This approach was consistent with NEPA guidance dating back to 1981: "The 'agency's preferred alternative' is the alternative which the agency believes would fulfill its **statutory mission** and responsibilities, giving consideration to economic, environmental, technical and other factors."[165]

Since the CEQ regulations are rescinded, DOI and other agencies are developing their own NEPA implementing regulations and guidance.[166] DOI's recently issued guidance tracks the CEQ 1981 guidance, i.e., the decision to include a preferred alternative is based on the agency's mission and applicable regulatory requirements: "NEPA does not require bureaus to identify a preferred alternative in an EA or an EIS, although it may be helpful for situations in which the bureau considers a broad range of alternatives. [The bureaus] **should review program-specific requirements on this issue**."[167] Furthermore, Bureaus should use their expert judgment and

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[162] *See* Draft EIS, Appx. B, Sec. B.2.1, at B-3.

[163] Draft EIS, Sec. 2.1, at 2-3.

[164] *See* 89 Fed. Reg. 35,442, 35,565 (May 1, 2024); (40 C.F.R. 1502.14(d) ("Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference."). Identifying preferred alternatives in draft NEPA documents (especially those that are environmentally preferrable) "will increase transparency and allow the public to comment on it." 89 Fed. Reg. at 35,504.

[165] 46 Fed. Reg. 18,026, 18,027 (Mar. 23, 1981) (emphasis added).

[166] 36 Fed. Reg. 10,610 (Feb. 25, 2025) (removal of NEPA implementing regulations).

[167] *See* DOI NEPA Implementing Procedures, Appx. 1, at 39 (emphasis added).

exercise their discretion in identifying the reasonable alternatives, which must be **technically and economically 'feasible**.'"[168]

Choosing a preferred alternative in the Draft EIS would have been helpful to all stakeholders–especially to the Basin States as they attempt to reach a "consensus approach"–so that they know what Reclamation believes to be the most "technically and economically feasible" alternatives to meet the purpose and need of the proposed action.

More importantly, the DOI guidance advises bureaus that agency personnel "should review **program-specific requirements** on [the] issue" of whether to include a preferred alternative in the Draft EIS. This direction makes clear that such requirements may eliminate the discretion not to set forth a preferred alternative.[169] In this context, as set forth in the non-exhaustive list of legal authority summarized below, the Law of the River contains numerous "program-specific requirements" pursuant to which the Secretary has various mandatory duties that mandate development of an agency preferred alternative under which Reclamation satisfies its legal obligations pertaining to Colorado River operations:

- **Colorado River Compact**: The Supreme Court has recognized that "interstate [water] compacts" enable "the federal government" to defend "distinctively federal interests" in litigation and, short of litigation, such compacts "inextricably intertwine[]" federal water projects with "Downstream Contracts" under which the federal government "assume[s] a **legal responsibility** to deliver a certain amount of water."[170] That is equally true in the case of the Colorado River Compact which imposes legal obligation on Reclamation to deliver water to satisfy its Treaty obligations with Mexico and water delivery contracts in the Lower Basin.

- **Boulder Canyon Project Act of 1928 ("BCPA")**:[171] This act (1) ratified the 1922 Compact; (2) authorized the construction of Hoover Dam and related irrigation facilities in the lower Basin; (3) apportioned the lower basin's 7.5 maf among the states of Arizona (2.8 maf), California (4.4 maf) and Nevada (0.3 maf); and (4) authorized and directed the Secretary of the Interior to function as the sole contracting authority for Colorado River water use in the lower basin. Relevant legal authorities include BCPA § 4 (establishing the Lower Basin State's allocations), BCPA

[168] *Id*.

[169] *See id*. at 38-39.

[170] See *Texas v. New Mexico*, 602 U.S. 943, 955 (2024) (quoting *Texas v. New Mexico*, 583 U.S. 407, 413 (2018) (emphasis added).

[171] 45 Stat. 1057, as amended, 43 U.S.C. § 617 et seq.

§ 5 (establishing that no one can divert Colorado River water in the Lower Basin without having a delivery contract with Secretary of the Interior).

- **Colorado River Storage Project Act of 1956 ("CRSP Act")**:[172] This act addresses construction and operation of the CRSP reservoirs, provides a comprehensive Upper Basin-wide water resource development plan, and authorizes the construction of Glen Canyon, Flaming Gorge, Navajo and Curecanti dams for river regulation and power production, as well as projects for irrigation and other uses.

- **Colorado River Basin Project Act of 1968 ("CRBP Act")**:[173] CRBP § 602(a) provides that "to comply with and carry out the provisions of the Colorado River Compact [of 1922], the Upper Colorado River Basin Compact, and the Mexican Water Treaty, the Secretary shall propose criteria for the coordinated long-range operation of [the CRSP reservoirs and Lake Mead] . . . . The criteria shall make provision for the storage of water in [CRSP Reservoirs] and releases of water from Lake Powell in the following listed order of priority: (1) releases to supply one-half the deficiency described in article III(c) of the Colorado River Compact, if any such deficiency exists and is chargeable to the States of the Upper Division[.]; (2) releases to comply with article III(d) of the Colorado River Compact, less such quantities of water delivered into the Colorado River below Lee Ferry to the credit of the States of the Upper Division from other sources; and (3) storage of water not required for the releases specified in clauses (1) and (2) of this subsection to the extent the Secretary . . . shall find this to be reasonably necessary to assure deliveries under clauses (1) and (2) without impairment of annual consumptive uses in the Upper Basin pursuant to the Colorado River Compact: Provided, That water not so required to be stored shall be released from Lake Powell: (i) to the extent it can be reasonably applied in the States of the Lower Division to the uses specified in article III(e) of the Colorado River Compact [except when] the active storage in Lake Powell is less than the active storage in Lake Mead, (ii) to maintain, as nearly as practicable, active storage in Lake Mead equal to the active storage in Lake Powell[.]"

- **43 C.F.R. Part 417 ("Procedural Methods for Implementing Colorado River Water Conservation Measures with Lower Basin Contractors and Others)**:[174] These regulations implement the BCP Act and *Arizona v. California*, 376 U.S. 340 (1964) (the "1964 Decree"), and require, among other things, that Reclamation to make annual determinations of each contractor's water orders to ensure "that deliveries

[172] 70 Stat. 105, 43 U.S.C. §§ 620–620o.

[173] P.L. No. 90-357, 82 Stat. 885 (Sep. 30, 1968) (codified at 43 U.S.C. § 1521(b)).

[174] 37 Fed. Reg. 18076 (Sep. 7, 1972).

> of Colorado River water to each Contractor will not exceed those reasonably required for beneficial use."[175] In addition, under the regulations, Reclamation may limit irrigation methods, crop types and cropping practices, amount and rate of return flows, and impose other limitations designed to conserve water.[176]

Given the above mandatory duties arising from its authority to establish reservoir operating parameters, Reclamation's failure to provide a preferred alternative that describes how such authority would be exercised during low flow conditions under the post-2026 operations guidelines violates NEPA and defeats NEPA's main purpose as recently articulated by the Supreme Court: "The law ensures that the agency and the public are aware of the environmental consequences of proposed projects. Properly applied, NEPA helps agencies to make better decisions and to ensure good project management."[177]

E. Reclamation Failed to Consider Under Each Alternative Lake Mead's Protection Pool and Conservation Reserve and Interrelationships with SNWA's Intentionally Created Surplus Accounts

As explained above, SNWA relies on Intentionally Created Surplus (ICS) and Tributary ICS water. Similarly, the Lake Mead Protection Pool promotes conservation opportunities for Basin Tribes. While SNWA and CRCNV acknowledge and appreciate that Reclamation referenced these conservation measures in the Draft EIS, SNWA and CRCNV provide the following comments and criticism of the analysis of the same.

First, one element of the Enhanced Coordination Alternative is the Lake Mead Protection Pool.[178] Reclamation explains that "[t]he Protection Pool could be used for a range of purposes, including, but not limited to, meeting federal firming obligations, other federal delivery obligations, protecting Lower Basin water supplies, protecting infrastructure, and providing environmental benefits."[179] Similarly, the Maximum Operational Flexibility Alternative proposes establishment of a "Conservation Reserve" as "a flexible tool for water conservation and management."[180] The Draft EIS explains that "Reclamation would determine how to allocate the Conservation Reserve volume . . . to meet . . . resource goals"[181]

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[175] 43 C.F.R. § 417.2.

[176] *Id*. § 417.3.

[177] *Seven Cnty. Infrastructure Coal. v. Eagle Cnty.*, 605 U.S. 168, 177 (2025).

[178] *See* Draft EIS, Sec. 2.6.3, at 2-21.

[179] *Id.*, Appx. B, Sec. B.6.3, at B-29.

[180] *Id*., Sec. 2.7, at 2-23 to 2-24.

[181] *Id*., Appx. B, Sec. B.7, at B-33.

Furthermore, "[a]t Reclamation's discretion and in coordination with appropriate Basin entities, additional adjustments to Lake Powell [Water Year] release volumes could be made to mitigate potential negative impacts to resources between Glen Canyon Dam and Hoover Dam."[182]

Nevada notes that the Draft EIS text pertaining to the Lake Mead and Powell protection/conservation pools is treated strikingly different than another element related to pro rata shortage sharing, namely this description found in the Enhanced Coordination Alternative: "[A]dditional agreements and other legal authorities would be needed to implement any pro rata operations that are inconsistent with the Decree."[183]

At a minimum, Reclamation fails to acknowledge any additional agreements and other legal authorities that would be needed to operate the Lake Mead and Lake Powell protection/conservation pools as described. There are no equivalent qualifying statements recognizing the need for additional agreements or other legal authorities for the Conservation Reserve described in the Maximum Operational Flexibilities alternative. Because there are unresolved issues associated with controlling and operating the Lake Mead Protection Pool and Conservation Reserve, including potential connected federal actions that may be subject to inclusion in the Draft EIS, Reclamation must provide an explanation of potential additional agreements and legal authorities that may be needed to effectuate these elements, and then incorporate these actions into the proposed actions, as appropriate.

Second, the alternatives analysis should include not only existing, but also the creation and release of new, Tributary Conservation ICS. The Interim Guidelines creating this conservation mechanism state that "the provisions of this Forbearance Agreement for creation, and release . . . of Tributary Conservation ICS shall continue in full force and effect after termination of this Forbearance Agreement until the earlier of (1) the termination of the period provided in the ROD for the creation, release, and use of Tributary Conservation ICS and Imported ICS, or (2) fifty years from the date of execution of this Forbearance Agreement."[184]

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[182] *Id*., Sec. 2.6.2.3, at 2-20.

[183] *Id.*, Sec. 2.6, at 2-16 and n.18.

[184] LCR ICS Forbearance Agreement, at 5 (executed December 13, 2007), available at https://www.usbr.gov/lc/region/programs/strategies/documents.html. The Forbearance Agreement and SNWA's Delivery Agreement provide the legal basis for any ICS or other conserved water that is created by SNWA to remain available in Lake Mead for SNWA's exclusive benefit until SNWA requests delivery of the ICS. ICS creation and delivery benefits are also available during periods of declared shortage through two mechanisms. The Developed Shortage Supply (DSS) mechanism found in Section 4 of the 2007 Interim Guidelines allows for the creation and delivery of some types of ICS during a declared shortage, and Exhibit 1 to Attachment B of the Agreement Concerning Colorado River Drought Contingency Management

For SNWA's Tributary Conservation ICS from the Muddy and Virgin rivers, both these timelines end in 2057. Yet, the Draft EIS fails to adequately describe that for all alternatives, including the No Action Alternative, SNWA is authorized to create and deliver Tributary Conservation ICS to 2057.

Third, the significant reduction in volumes available for Nevada to create, store, and deliver ICS in the Enhanced Coordination and Maximum Operational Flexibility alternatives is arbitrary and unacceptable. Similarly, it is not clear how or whether Reclamation intends to protect ICS that is stored in Lake Mead, or to allow deliveries of ICS water to other uses as Lake Mead declines. Given the existing legal and binding agreements governing ICS water to which Reclamation is a party, SNWA's volume of ICS, Drought Contingency Plan ICS, and Developed Shortage Supply water should not be delivered to other contractors even if the Secretary of the Interior declares a shortage condition exists. As the smallest State entitlement holder and most sustainable water conservation actor in the Colorado River Basin, Nevada must specifically be allowed to at minimum retain the opportunity to create, store, and deliver ICS at or above current allowances. Reclamation should prepare supplemental analyses adopting Nevada ICS volumes across all of the alternatives that are at or above the current volumes allowed. As analyzed, the Enhanced Coordination and Maximum Operational Flexibility alternatives include ICS volumes that are insufficient and unacceptable to Nevada, and they represent roadblocks toward Nevada achieving water security. Moreover as a general matter, modifications should be made under extremely limited circumstances such that ICS that is stored in Lake Mead is available when Lake Mead is below elevation 1,025 feet to the contractor that stored the water if sufficient protections can be provided to satisfy the public health, safety, and welfare needs of municipal water users.

Fourth, the Draft EIS includes modeling assumptions that indicate that both the creation and delivery of Tributary Conservation ICS is considered, but the more important description of alternatives found in Chapter 2 does not.[185] The alternatives analysis should include not only existing, but also creation and release of new Tributary Conservation ICS.

Fifth, the Maximum Operational Flexibility Alternative does not utilize Lake Mead storage as part of the Glen Canyon Dam release determinations, but Lower Basin shortages are based on the combined system storage. Modifying Glen Canyon Dam releases based on a system wide storage approach would improve reservoir coordination.

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and Operations authorizes the creation and delivery of Drought Contingency Plan ("DCP") ICS during periods of declared shortage.

[185] *See* Draft EIS Appx. B, Secs. B.4.2.5, B.6.2.5, and B.8.2.5. For example, Draft EIS, Sec. 2.1.3.2 references only the delivery of ICS that remains in Lake Mead in 2027.

Sixth, Appendix B mentions that lower priority water users, such as MWD, CAP, and SNWA, would not be able to take delivery of unused water from the Lower Division Tribes stored in the Protection Pool, but Appendix H states that some Arizona Priority 4 users would. Appendix H should explain which contracts are unable to take delivery.

F. Reclamation Failed to Consider Nevada's Contract Rights to Withdraw Lake Mead Water During Dead Pool Conditions

Nevada appears to be included in the group of water users to which dead pool-related reductions are distributed; however, this assumption fails to recognize that SNWA is able to take delivery of water in Lake Mead at dead pool elevation while other water users are not. Specifically, the Boulder Canyon Project Act ("BCPA") contract includes a provision regarding the "[d]elivery of Water by the United States" which states that the "United States shall . . . deliver to the Authority such quantities of water as may be determined reasonably required for beneficial use by the Authority within the limitations hereinafter specified and to the extent such water is available for delivery to Nevada."[186] Moreover, SNWA's third drinking water intake and low lake level pumping station provide the facilities necessary to ensure that any water that may be stored below dead pool is available for delivery to SNWA.[187] Under dead pool elevations, while stored water is unavailable to all other BCPA contract holders, it is exclusively available to SNWA. This fact should be included in and analyzed the alternatives analysis.

G. Reclamation Failed to Analyze for Each Alternative Equitable Reductions of Evaporation and Storage Losses

Reclamation indicates that the Hydrologic Model used in the NEPA analysis included evaporation rates for reservoirs.[188] While the modeling assumptions do include an annual evaporation deduction (equal to the conservation pool's proportional share of total evaporation in Powell), none of the alternatives nor modeling assumptions include any complete analysis in parity with the Lower Basin's. As SNWA has previously indicated to Reclamation, equivalent equitable reductions of evaporation and storage losses remain an important element which should be adopted into one or more alternatives and included in the impacts analysis.[189]

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[186] SNWA Contract for Delivery of Colorado River Water, Contract No. 2-07-30-W0266, § 4(a) (1992); see also Contract No. 2-07-30-W0266 Amendment No. 1, § 4(a) (1994).

[187] SNWA 2026 Water Resource Plan, at 8, 23.

[188] *See* Draft EIS, Sec. 3.2.4, at 3-7.

[189] *See* Letter from John Entsminger (SNWA) and Eric Witkoski (CRCNV) to Tanya Trujillo (Dec. 20, 2022).

Moreover, a lack of parity of creation and evaporation/loss assessments exists between the Upper and Lower Basins. Specifically, the Enhanced Coordination Alternative provides for a 7% assessment to Lower Basin conservation creation, but assigns no equivalent assessment to Upper Basin conservation.[190] Reclamation should address these deficiencies in supplemental analyses.

H. Reclamation Failed to Include an Alternative that Addresses Conservation Opportunities to Mexico

Reclamation explains in the Draft EIS that:

> Determination of deliveries to Mexico is not a part of the proposed federal action. Any such determination would be made in accordance with the 1944 Water Treaty. Nevertheless, modeling assumptions regarding water deliveries to Mexico are necessary in order to analyze the potential impacts to hydrologic and other environmental resources. Reclamation's modeling assumptions are not intended to constitute an interpretation or application of the 1944 Water Treaty or to represent current United States policy or a determination of future United States policy regarding deliveries to Mexico. The United States will conduct all necessary and appropriate discussions regarding the proposed federal action and implementation of the 1944 Water Treaty with Mexico through the IBWC in consultation with the Department of State.[191]

Reclamation's failure to include conservation opportunities to Mexico in the alternatives skews the analysis to the detriment of the Lower Basin States and Mexico. Furthermore, assumed reductions in deliveries to Mexico have been modeled, but assumed conservation was not modeled in any alternative. Anticipated conservation activities should have been included. The 1944 Mexican Water Treaty has allowed Mexico to develop conservation water and store it in Lake Mead and future water conservation by Mexico is a reasonable assumption that should be included in the analysis.

I. Reclamation Failed to Include the 417 Process in the Alternatives Analysis

Reclamation acknowledges that the "Procedural Methods for Implementing Colorado River Water Conservation Measures with Lower Basin Contractors and Others," found at 43

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[190] *See* Draft EIS, Sec. 2.6.3.2, at 2-22; *id.* Appx. B, Sec. B.6.3.6, at B-32.

[191] *Id*., Sec. 2.2, at 2-3.

C.F.R. Part 417, are included in the Law of the River.[192] However, Reclamation fails to analyze how implementation of the "417 Conservation Process" can be incorporated into the proposed action to advance the purpose and need of promoting water conservation. Reclamation should update and apply 417 "reasonable and beneficial use determinations" to the NEPA analysis to promote conservation and reduce the risk that delivered system water is being wasted.

J. Reclamation Failed to Equitably Reduce Water Availability between the Upper and Lower Division States Given Projections of Future Inflows

Reclamation failed to equitably reduce water availability between the Upper and Lower Basin States, given projections of future inflows. Maximum shortage volume is set at a level estimated by Reclamation to ensure that an assumed minimum flow maximum; shortage volume is set at a level estimated by Reclamation to ensure that an assumed minimum flow.

The recent multi-decadal drying trend in the Colorado River Basin and subsequent reduction in Colorado River flow has been confirmation of what climate scientists have been reporting that regarding future flows of the Colorado River. However, instead of allocating these basin-wide impacts equitably between the Upper and Lower Division States, Reclamation unreasonably disadvantages the Lower Division States, thus unfairly assigning blame to the Lower Division States for diminished future inflows. For example, in the Enhanced Coordination Alternative, reductions above 1.5 maf are applied at a 2 to 1 ratio with the Lower Basin required to reduce consumptive use twice as much as the Upper Basin.[193] Also under the Enhanced Coordination Alternative, Reclamation improperly imposes the burden on the Lower Basin to make up any shortage amount not available to the Upper Basin in its conservation pool. Reductions in future inflows should be shared equitably among the Upper and Lower Basins.

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[192] *Id*., Sec. 1.8.2.1, Table 1-1, at 1-14.

[193] *See id.*, Sec. 2.6.3.1, at 2-21 ("Water held in the Lake Powell conservation pool would be converted to system water and combined with Lower Basin shortages to provide system benefits based on the shortage curve in Figure 2-5. When Lower Basin CY shortages are greater than 1.5 maf, a volume equal to one-third of the volume above 1.5 maf would be converted from the Lake Powell pool into system water such that the total of Lower Basin shortages and conversion of Upper Basin water equal the required total shortage volume (i.e., above 1.5 maf, there is a 2-to-1 Lower Basin shortage-to-Upper Basin conversion ratio). If the prescribed 2-to-1 volume is not available in the Lake Powell conservation pool, 100 percent of the available volume would be converted, and the Lower Basin would take the balance of shortages.").

K. Reclamation Should Have Considered a Phased Alternative to Address Long-Term Measures to Meet the Purpose and Need

Reclamation states in Draft EIS, Chapter 1, that:

> To provide stability and predictability to Basin water users, the Secretary intends that the interim period extend approximately 20 years; however, given the ongoing efforts toward achieving consensus among various Basin entities regarding appropriate post-2026 operations, the Secretary remains open to a shorter duration or phased implementation as part of a longer-term framework.[194]

For the reasons below, Reclamation must issue a supplemental environmental impact statement that includes an alternative that identifies and analyzes long-term measures to meet the purpose and need.

First, Nevada recognizes that the current operational guidelines expire at the end of this year and that Reclamation must shortly implement the proposed action. However, the proposed action does not include some of the longer-term and more sustainable measures to meet the project purpose and need and to comply with the Law of the River. Some of the longer-term measures include, but are not limited to, reparations of the river outlet works, penstocks, and trailrace, implementation of voluntary or mandatory conservation and/or consumptive use reductions on the Upper Basin States, and creation of a conservation pool program in Lake Powell. Without these longer-term measures, the proposed action and the alternatives analysis to satisfy the purpose and need on a long-term basis is incomplete and violates NEPA—it is incumbent on the lead agency, not stakeholders, to identify and analyze a reasonable range of alternatives that fully satisfies the project purpose and need.[195]

Second, without an alternative that includes long-term measures that require additional time and effort to develop, Reclamation violates its obligations to maintain the infrastructure in working order and to comply with water delivery requirements in low flow conditions as required by the Law of the River.[196]

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[194] Draft EIS, Sec. 1.1, at 1-2.

[195] NEPA § 102(2)(C)(iii), 42 U.S.C. § 4332(2)(C)(iii).

[196] *Supra* p. 23.

Third, phased (or "staged") alternatives are commonly used when the proposed action must be implemented in phases rather than all at once, but must be considered in a single NEPA document to avoid segmentation of connected actions.[197]

VII. Reclamation's Model Used to Develop and Compare Alternatives Includes Numerous Errors and Inaccurate and Incomplete Assumptions

Nevada identifies the following issues regarding the modeling Reclamation used to develop and compare alternatives.

First, the demand schedules used and the sensitivity analysis applied to the modeling, as shown in Appendix I, show Lake Powell and Mead's critical elevations are highly sensitive to the Upper Basin demand inputs in all but one of the action alternatives.[198] This raises the question about the modeling's reliability.

Second, as to the sensitivity analysis in Appendix K, Method B assigns a reduction volume to Mexico that is proportional to the total volume of reductions taken by the United States. The United States' reductions come from law and policy that have reduced Lower Basin allocations, and in consideration of has been referred to as "hydrologic shortages" in the Upper Basin. Hydrologic shortages are calculated as the difference between the Upper Basin's demand schedule and the modeled water delivery.[199] Without sufficient support, Reclamation's Upper Basin demand schedule is highly optimistic because it assumes surplus water can meet some of the demands. In other words, the model is not sophisticated enough to determine whether an Upper Basin water user is, in fact, shorted. The methodology thus considers any unmet demand as a shortage based on unwarranted assumptions that the supposed shortage to a water user is, in fact, a shortage, rather than a junior use that is rarely available because of over-appropriation.

All river basins have various categories of use (both formally and informally). These can loosely be characterized into base-flow water rights and surplus or flood-flow water rights. Surplus-flow rights are issued subject to the understanding that the water right will not be satisfied every year because surplus water is simply not available every year. Similarly, basins may be over-appropriated, meaning that more water rights were issued than can be routinely satisfied. Neither a surplus/flood flow water right nor a water right issued in an over-appropriated basin should be considered as the amount of water the Upper Basin is being "shorted."

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[197] *See Kleppe v. Sierra Club*, 427 U.S. 390, 409-10, 96 S. Ct. 2718, 2730 (1976); *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1313 (D.C. Cir. 2014).

[198] Draft EIS, Appx. I.

[199] Draft EIS, Appx. K.

To adequately address this issue, a significantly more rigorous analysis is required rather than simply relying on the nodes in which the Upper Basin demands are aggregated (approximately two dozen points for the entire Upper Basin). At an absolute minimum, a water-rights based model and/or an inventory of each tributary, with an understanding of the historical use and availability of each water user's rights/entitlement is necessary. The historical availability of a water right should ultimately determine whether the "unavailability" of that right can be considered shortage. For example, if a water right was issued in 1920 and has been satisfied in over 90% of years, then the inability to satisfy that right would likely be a shortage. But, if a water right was issued in 1968 and it has only been fully met once every 5 years, the other four years should not be considered shortage.

Furthermore, the Colorado River Simulation System ("CRSS") model increases demand throughout time, further exacerbating the deficiencies noted above. If the demand node is already experiencing "shortage," and every single model node does, and more demand is added, the result is not shortage, but rather over appropriation. The Upper Basin's failure to manage uses to the water supply available to them, and to issue water rights accordingly, should not be the basis of calculating shortages. Numerous courts within the Upper Basin have questioned the sufficiency of analysis for future projects or denied projects based on the requirement to curtail use under the Compact. Thus, stakeholders broadly understand that, at present, new water rights issued are likely to be curtailed and the reductions to those rights issued with that understanding would not constitute a shortage.[200] Thus, the methodology of simply subtracting the depletion from the demand schedule, while still allowing the schedule to grow throughout time, is fatally flawed and should be eliminated from this analysis.

VIII. The Four "Operational Elements" Used to Establish the Operational Assumptions Underlying Each Alternative and to Compare Impacts Contain Errors and False Assumptions Which Skew the Analysis of Alternatives and Impacts

Reclamation provides four "Operational Elements" to establish the operational assumptions underlying each alternative and to compare their respective impacts. One such element, identified as "Additional Activities Above Lake Powell," includes "conservation by Upper Basin water users to support critical elevations at Lake Powell and other important system goals."[201] However, Reclamation provides no details regarding the specific conservation measures referenced, nor does Reclamation assign conservation volumes to specific Upper

[200] *See Water Horse Resources v. Wilhelmsen*, 2025 UT 43, 11-12, 16 (2025) ("The Upper Basin is required to deliver the entire 7.5 MAF (or 75 MAF every 10 years) before taking its allocation"); *Save the Colorado v. U.S. Army Corps of Engineers,* 2024 WL 4519201 N. 24 (D. Colo. Oct. 16, 2024) ("it is perplexing to this Court that the Corps dismissed the possibility of a compact call in its analysis of a proposed water management project").

[201] Draft EIS, Sec. 2.2.4, at 2-5.

Basin States or users. Generally mentioning conservation without specific details provides insufficient information to factor into the analysis, especially given the reluctance of Upper Basin States to implement meaningful conservation measures.

With respect to the Operational Element relating to "Delivery of Conserved System and Non-System Water," Reclamation explains that "[w]hile delivery of some existing stored water remains available after 2026 pursuant to existing agreements, Reclamation will establish guidelines for administration of a **new** storage mechanism as part of this public NEPA process. The guidelines will set forth **Reclamation requirements** for verification of the conservation action and water accounting procedures."[202]

Reclamation should have been more specific regarding which basins would be subject to "new" storage mechanisms and identify and analyze "future" conservation verification and water accounting procedures. Moreover, the Lower Basin has been required to provide Reclamation with detailed annual planning and verification reports since the Intentionally Created Surplus ("ICS") program began in 2008. Reclamation should hold the Upper Basin to the same planning and verification standards as the Lower Basin.

IX. The Draft EIS Impacts Analysis Violates NEPA

NEPA requires federal agencies to consider the reasonably foreseeable environmental effects of major federal actions significantly affecting the quality of the human environment, as well as alternatives to proposed actions.[203] Agencies generally accomplish this procedural mandate by preparation of an EIS, a "detailed statement" that serves NEPA's twin aims to ensure that (1) federal agencies will "have available, and will carefully consider, detailed information concerning significant environmental effects" and (2) "relevant information will be made available" to the public and other government agencies.[204] When "[p]roperly applied, NEPA helps agencies to make better decisions and to ensure good project management."[205]

In considering environmental effects, DOI guidance directs agencies to consider, "as appropriate to the proposed action," "any connected actions, the scope of the affected area . . . reasonably foreseeable trends and planned actions within that area, and the affected area's natural and cultural resources."[206] The agency must take into account both short- and long-term effects, beneficial and adverse effects, effects on public health and safety, economic

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[202] *Id*. (emphasis added).

[203] 42 U.S.C. § 4332(2)(C)(i), (iii).

[204] *Robertson v. Methow Valley Citizen's Council*, 490 U.S. 332, 349-50 (1989).

[205] *Seven Cnty. Infrastructure Coal. v. Eagle Cnty.*, 605 U.S. 168, 177 (2025).

[206] DOI NEPA Implementing Procedures, § 1.2(b)(1), at 4.

effects, and effects on the quality of life of the American people.[207] The agency must "make use of reliable existing data and resources."[208]

NEPA's action-forcing provision demands that agencies take a "hard look" at the environmental consequences of proposed federal actions.[209] To satisfy the "hard look" requirement, "an agency must provide 'a reasonably thorough discussion of the significant aspects of the probable environmental consequences.'"[210] Agencies should use "the best available information and the quantitative and or qualitative analyses to provide a reasoned basis for making a choice among alternatives."[211] In reviewing an EIS under the Administrative Procedure Act's arbitrary and capricious standard, the court considers whether the agency "considered the relevant factors and articulated a rational connection between the facts found and the choices made."[212]

Reclamation's Draft EIS impact analysis is not consistent with NEPA's "hard look" standard. In some instances, the analysis is incomplete, confusing, or lacking in detail. In other instances, Reclamation resorts to listing numbers of affected acres or tallying the number of affected counties without discussing in sufficient detail the actual impacts. General statements about possible effects are not sufficient to adequately disclose the potential impacts of the alternatives to the public or inform the decisionmaker.[213] The following examples discuss the deficiencies in key areas.

A. Reclamation's "Continued Current Strategies (CCS) Comparative Baseline" Fails to Provide a Reasonable Basis to Compare Impacts from the Various Alternatives

Reclamation describes the "CCS Comparative Baseline" scenario as follows:

> [A]s described in Chapter 2, due to the expiration of current domestic and international implementing agreements, the No Action Alternative represents a change in operations. As such, the No Action Alternative in this EIS does not serve as an appropriate

[207] *Id*. at § 1.2(b)(2).

[208] *Id*. at § 3.7.

[209] *Cascadia Wildlands v. Bureau of Land Management*, 153 F.4th 869, 879 (9th Cir. 2025).

[210] *Id*. at 902 (quoting *350 Montana v. Haaland*, 50 F.4th at 1254, 1265 (9th Cir. 2022)).

[211] *See 350 Montana v. Haaland*, 50 F.4th 1254, 1265, 1279 (9th Cir. 2022).

[212] *N. Cascades Cons. Council v. U.S. Forest Serv*., 136 F.4th 816 (9th Cir. 2025).

[213] W. Watersheds Project v. Abbey, 719 F.3d 1035, 1047 (9th Cir. 2013).

> baseline to compare impacts. To address this challenge, a CCS Comparative Baseline scenario is provided to assess the impacts if operations continued under the current direction and strategies. While the CCS Comparative Baseline is not an action alternative, it is a contemporary set of operations that stakeholders are familiar with that can be used to comparatively evaluate the performance of the alternatives (including the No Action Alternative).
>
> The [CCS] modeling assumptions were designed to reflect a continuation of the primary existing agreements for Colorado River management including the 2007 Interim Guidelines, the 2019 DCP and Minute 323 of the 1944 Water Treaty.[214]

Similar to the Reclamation's failure to incorporate a legally sufficient no action alternative, as addressed above, here the Reclamation falls short of NEPA's evaluation and disclosure requirements in its use of the CCS scenario. Reclamation fails to include in either the CCS or no action alternative the steps it will actually have to take to comply with the Law of the River if there is no action by Reclamation and no agreement reached among the Basin States.

As the Ninth Circuit has explained, the "no action alternative in an EIS allows policymakers and the public to compare the environmental consequences of the status quo to the consequences of the proposed action. The no action alternative is meant **to provide a baseline against which the action alternative . . . is evaluated**."[215] A "true 'no action alternative'" establishes a baseline reflecting the elements of existing management plans that comprise the "status quo."[216] So too here. An accurate baseline scenario must incorporate those concepts.

Given the uncertainties regarding operations after expiration of the 2007 Interim Guidelines, Reclamation could have used multiple no action alternatives or scenarios to evaluate such a baseline such as an extension of the 2007 Interim Guidelines as well as operations without an extension of the 2007 Interim Guidelines.[217]

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[214] Draft EIS, Sec. 3.2.3, at 3-5.

[215] *Center for Biological Diversity v. U.S. Dep't of Interior*, 623 F.3d 633, 642 (9th Cir. 2010) (emphasis added).

[216] *See Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1037-38 (9th Cir. 2008) (striking down SEIS for Merced River Wild and Scenic Comprehensive Management Plan for improper use of no action alternative in violation of NEPA).

[217] *See* Mandelker, NEPA Law and Litigation § 10:33 (2022 ed., Aug. 2022 update) ("[N]othing in NEPA prevents an agency from considering multiple no action alternatives"); *see Center for*

While Reclamation was not required to consider multiple no action alternatives, or baseline scenarios, Reclamation's failure to use the No Action Alternative as a status quo baseline to consider any reasonably foreseeable impacts beyond 2026 vitiates NEPA's alternatives analysis requirements. As a result, the Draft EIS underplays the socioeconomic and other impacts under the No Action Alternative, which are projected to increase over time.

B. Reclamation Failed to Adequately Consider Economic, Population, and Land Use Impacts on the Lower Basin States

Socioeconomic impacts extend beyond Clark County. The Draft EIS analysis area for socioeconomic effects in Nevada accounts "solely for Clark County."[218] The Draft EIS explains that "[s]hortages in Nevada would be limited to Southern Nevada Water Authority's service area," so the impact analysis was limited to that area.[219] But the reality is that the effects of water shortages in Clark County, Nevada, which is the state's largest metropolitan area, will affect the entire state.

Southern Nevada obtains about 90 percent of its water supply from the Colorado River.[220] Clark County's population accounts for 70 percent of the State of Nevada and more than 70 percent of Nevada's economic output.[221] One study concluded that Colorado River water accounts for approximately $115.4 billion of Nevada's gross state product:

> The total impact of the loss of Colorado River water for one year for the State of Nevada economy is estimated at $115.4 billion GSP, over 1.4 million jobs, and approximately $70.6 billion labor income (2014$). To put this into perspective, an estimated 87.4% of the State of Nevada's annual GSP could be lost if Colorado

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Biological Diversity v. FERC, 67 F.4th 1176, 1182 (D.C. Cir. 2023) (upholding use of "true no-action alternative" and "likely no-action alternative" in order to avoid confusion in connection with authorization to construct natural gas pipeline and related facilities); *Red Lake Band of Chippewa Indians v. Army Corps of Eng'rs*, 636 F.Supp.3d 33, 66-67 (D.D.C. 2022) (upholding use of multiple no action alternatives used in Army Corps of Engineers NEPA analysis of impacts from dredge and fill permit to support oil pipeline construction).

[218] Draft EIS, Sec. 3.16.1, at 3-171; *id.*, Sec. 3.17.2, at 3-187 (same).

[219] *Id.*, Tech. Appx. 16, Sec. TA 16.1.1, at 16-3.

[220] *See generally* SNWA 2026 Water Resource Plan, at 13.

[221] *See* Draft EIS, Sec. 3.16.1, at 3-172 (Clark County accounts for 74% of Nevada employment).

River water is no longer available to residents, businesses, industry, and agriculture.[222]

Contraction of the economy in Clark County has implications for the economy of the state as a whole, including the functioning of state government services on a broadscale. The relative importance of SNWA's water supply to economic growth in the entire state merits careful consideration and comparison among alternatives. Failure to conduct such an analysis renders the Draft EIS incomplete and inaccurate.

The socioeconomic effects analysis fails to take a hard look at the effects on municipal water use. NEPA requires a robust evaluation of direct and indirect effects, especially the socioeconomic impacts of managing the supply of water to 40 million people and of generating hydroelectric renewable power for western energy markets.[223] Courts have noted the importance of addressing socioeconomic impacts to ensure NEPA compliance in connection with other Reclamation water supply projects.[224]

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[222] *See* Arizona State University, *The Economic Importance of the Colorado River to the Basin Region*, at 15-16 (Dec. 18, 2014), available at https://protectflows.com/wp-content/uploads/2015/01/PTF-Final-121814.pdf.

[223] *See* NEPA § 101(a), 42 U.S.C. § 4331 (purpose of NEPA "to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the **social, economic**, and other requirements of present and future generations of Americans.") (emphasis added); *id.* § 102(2)(C), 42 U.S.C. § 4332(2)(C) ("[A]ll agencies of the Federal Government shall— . . . include in every recommendation [for] major Federal actions significantly **affecting the quality of the human environment**, a detailed statement . . . on reasonably foreseeable environment effects.") (emphasis added); *see Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 773-74 (1983) ("To determine whether [NEPA] § 102 requires consideration of a particular effect, we must look at the relationship between that effect and the change in the physical environment caused by the major federal action at issue," looking for "a reasonably close causal relationship between a change in the physical environment and the effect at issue.").

[224] *Nat'l Wildlife Fed. v. Nat'l Marine Fisheries Serv.*, 184 F. Supp. 3d 861, 904 (D. Ore. 2016) (remanding decision to Reclamation and Army Corps to prepare an EIS that among other things considered "socioeconomic processes" relating to "harvest, hatchery production, and hydropower operations" in connection with change of operations of the Federal Columbia River Power System); *Center for Env't Law and Policy v. Bureau of Reclamation*, 715 F. Supp. 2d 1185, 1193 (E.D. Wash. 2010) (upholding EIS in part because Reclamation included in the EIS a detailed "discussion of effects on socioeconomics and land use in the []downstream communities" and impacts on "existing agricultural activities" in connection with Lake Roosevelt Drawdown Project).

The Draft EIS's analysis of impacts to municipal water users falls short in several respects. *First*, the focus of the analysis is on population **growth** and loss of opportunity for population growth—i.e., people who do not yet live in the impact area—without adequate attention to impacts to **existing** populations that already depend on Colorado River water supplies to support their daily lives.[225] The analysis evaluates the robustness of alternatives based on which "would likely result in fewer potential indirect impacts on **population growth**."[226] For Nevada, the discussion addresses how water deliveries will affect "constraints on **new** housing, commercial development, and essential municipal services that depend on water supply," and that alternatives with lower reliability are likely to "limit the **capacity of communities to expand**, influence land use patterns, or delay **new** construction projects."[227]

Reclamation acknowledges in Chapter 1 that "balancing the potentially profound impacts of water delivery reductions with the need to maintain reservoir storage" is an important tradeoff to be considered in evaluating alternatives.[228] Yet, the only open acknowledgement of impacts on the people who live and work in communities dependent on Colorado River water is the shockingly cavalier statement that "[s]hould shortages result in a reduction or elimination of legal access to municipal water, widespread impacts on social and economic conditions could also be possible."[229] Indeed, "[i]n some scenarios, municipalities could find the need to pursue alternative water sources or hauled water, **if available**, as an alternative to support continued services."[230]

Other than these offhand statements, there is no analysis of the very real and dire effects to millions of municipal water users if the taps are turned off, or water use must be significantly curtailed. There cannot be a more profound impact than a situation in which a municipal region, like Southern Nevada with a population of more than 2 million residents, must consider providing "hauled water." The economic cost of such an impact would be astronomical. And the social costs are unfathomable. A few throwaway statements that portend a grim future for lower basin communities do not reflect the mandatory "hard look" at the effects of Colorado River management or a considered tradeoff between the impacts of

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[225] *See* Draft EIS, Sec. 3.17.1, at 3-184 ("Population growth can increase the demand for domestic, agricultural, and industrial use and increase pressure on existing water sources. Studies have shown that population growth can be a dominant driver of long-term municipal water demand.").

[226] *Id*., Sec. 3.17.2, at 3-189 (emphasis added).

[227] *Id*., Sec. 3.17.2, at 3-191 (emphases added).

[228] *Id*., Sec. 1.1, at 1-2.

[229] *Id*., Sec. 3.17.2, at 3-193.

[230] *Id*. (emphasis added).

delivery reductions with maintaining reservoir storage. NEPA requires Reclamation to fully consider the weight of the socioeconomic and population impacts, including to the landscapes and people that live there.

Second, the analysis assumes that population effects are tied to water availability without any consideration of the critical element of water conservation. Southern Nevada continues to implement one of the most progressive water conservation programs in the nation that has yielded significant water savings over the last 20 years.[231] Southern Nevada has decreased per capita water use by 55 percent between 2002 and 2024, even as population in Clark County has increased by 55 percent during the same timeframe.[232] The figure below shows Southern Nevada's progress in water conservation, reaching a per capita water use of approximately 100 gallons per day.[233] It is this conservation that has sustained Clark County's capacity for population growth, given that Southern Nevada's Colorado River apportionment has remained unchanged for decades.

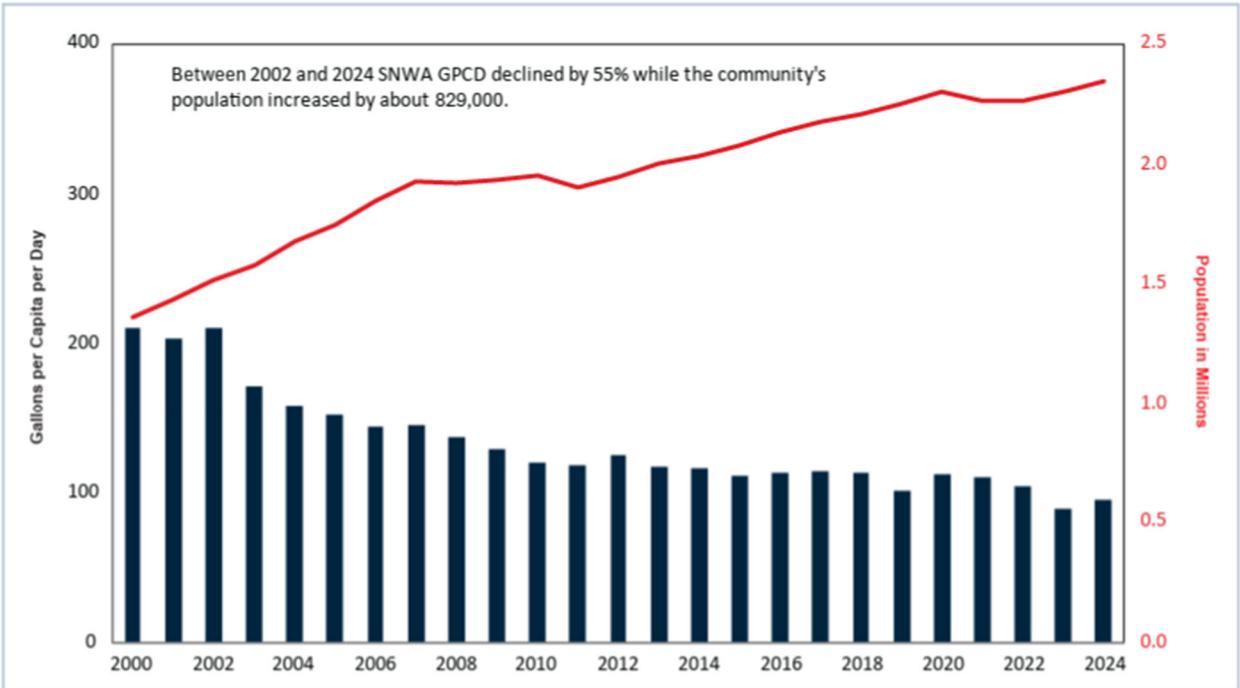

FIGURE 3.4 **Population & Per Capita Water Use**

[231] *See* SNWA Water Resources Plan (2025); *see also supra* pp. 1-3, above.

[232] *See* SNWA Water Resources Plan (2025), at 38.

[233] The Draft EIS report that Southern Nevada's water use is "approximately 126-150 gallons per day" is incorrect. *See* Draft EIS, Appx. 17, Sec. TA 17.1.2, at 17-4.

While water conservation remains a top priority, the opportunities for additional water savings per capita are fewer in southern Nevada where substantial conservation gains have already been made.[234] Southern Nevada's ambitious water conservation goal is to reach 86 gallons per day by 2035.[235]

By contrast, in some areas served by the Colorado River, conservation has not been prioritized, and opportunities for large water savings at lower costs continue to exist.[236] These disparities in costs of water conservation measures must be factored into the socioeconomic impact analysis to inform the public and Reclamation's decision.

Third, the Draft EIS does not consider the economic costs to municipal water agencies of decreased supply. While NEPA does not require quantification of all environmental impacts or a full cost-benefit analysis, where an agency chooses to quantify some socioeconomic costs and benefits, it must similarly quantify other socioeconomic costs and benefits to avoid the type of one-sided, misleading impact analysis that courts have repeatedly rejected.[237]

Reclamation takes into account potential economic losses in the agricultural sector and to river-based recreation, but fails to similarly quantify the economic, including workforce,[238]

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[234] *See* Statement of John J. Entsminger, General Manager, Southern Nevada Water Authority before the U.S. Senate Committee on Energy and Natural Resources (June 14, 2022); and Southern Nevada Water Authority Operating and Capital Budget 2025, available here.

[235] SNWA 2026 Water Resources Plan, at 39.

[236] *See generally* Heather Cooley, NRDC, Agricultural Water Conservation and Efficiency Potential in California (June 2014), available at https://www.nrdc.org/sites/default/files/ca-water-supply-solutions-ag-efficiency-IB.pdf.; California Water Resources Control Board, Imperial Irrigation District Alleged Waste and Unreasonable Use of Water available at Imperial Irrigation District Alleged Waste and Unreasonable Use of Water (June 1984) available at https://www.waterboards.ca.gov/waterrights/board_decisions/adopted_orders/decisions/d1600_d1649/wrd1600.pdf.

[237] *Ctr. for Biological Diversity v. NHTSA*, 538 F.3d 1172, 1198 (9th Cir. 2008) (agency "cannot put a thumb on the scale by undervaluing the benefits and overvaluing the costs").

[238] *See* Draft EIS, Sec. 3.16.1 at 3-173. The first paragraph under the heading "Nevada" presents employment in Arts, Entertainment, and Recreation (NAICS 71) in Clark County. However, for a tourism-based economy such as Clark County's, the Bureau of Labor Statistics' Leisure and Hospitality supersector provides a more appropriate measure of tourism-related employment. As defined by the BLS, the Leisure and Hospitality supersector combines Arts, Entertainment, and Recreation (NAICS 71) with Accommodation and Food Services (NAICS 72), offering a more comprehensive view of employment associated with visitor-driven economic activity. The EIS

losses associated with reductions in domestic/municipal and industrial (M&I) water.[239] This disproportionate treatment allows Reclamation to obscure the full extent of economic costs to cities like Henderson and Las Vegas, Nevada (including costs that may result from changes to bond ratings, increased borrowing costs, reductions in urban landscape/tree canopy, increased extreme urban heat, and increased rate pressure on users) by choosing not to put those costs in dollar figures similar to the losses to agriculture- and recreation-based communities. The differences are stark.[240] In fact, available information indicates that the economic impacts associated with loss of a single acre-foot of water for domestic/M&I users in major metropolitan areas are levels of magnitude greater than the economic impacts associated with loss of an acre-foot of water on an irrigated field.[241] Reclamation should add a Clark County-specific analysis that links modeled Colorado River shortage conditions to restrictions, storage use, and cost/rate pressures, and identifies the most affected communities and sectors.

Fourth, there is zero analysis or comparison among alternatives of socioeconomic impacts to agriculture, recreation, and communities in Upper Basin states. This is an outgrowth of Reclamation's failure discussed above, to consider alternatives that include shortage sharing by the Upper Basin states and its artificial limitation of the geographic scope of impact analysis

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should be revised to include employment from Accommodation and Food Services (NAICS 72) sector.

[239] *See id.*, Sec. 3.16.2, at 3-175 (IMPLAN economic model considered loss of agriculture jobs and income and loss of jobs and labor income in the recreation industry), 3-177 (socioeconomic impact indicators consider changes in jobs and income for agriculture and recreation industries).

[240] In addition to the direct losses to the Southern Nevada economy, indirect effects will also be felt by local governments as the economy constricts. The Draft EIS does not consider the potential impact of Colorado River shortages on tax revenues to support government services in Clark County, other Counties in Nevada, and the State of Nevada.

[241] Reclamation should apply existing methodologies to quantify socioeconomic impacts to domestic/M&I users. At least two metrics are available to quantify the cost of an acre-foot of water in urban communities. *See* White, W. T., Carroll, T. M., Schwer, R. K., *The Impact of a water-imposed interruption of growth in the Las Vegas region* (1992), available at https://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=1115&context=water_pubs; Hobbs, Ong & Associates, *The Impact of a Growth Interruption in Southern Nevada* (2004), available at http://water.nv.gov/hearings/past/Spring%20Valley%202006/exhibits/SNWA/527.pdf. While these methodologies are not without limitations, Reclamation's choice to avoid quantifying socioeconomic impacts to Clark County altogether violates NEPA's principles of informed decisionmaking.

to the river corridor at Lake Powell and below.[242] Comprehensive and coordinated management of the Colorado River requires commitments from all the basin states and means every community that makes use of Colorado River water will be affected, not just those below Lake Powell. The failure to even consider the socioeconomic effects on Upper Basin states is a glaring omission that reflects Reclamation's impermissibly narrow purpose and need and alternative approaches to Colorado River management.

In sum, the Draft EIS socioeconomic analysis is fundamentally inadequate because it evaluates water-shortage impacts only through agriculture, water-based recreation, and non-market values, ignoring the far broader economic, social, and equity consequences to existing municipal water users. The analysis also relies on an unsupported assumption that population growth drives increased consumptive water use when, in fact, conservation policies, not population, are the true drivers of demand. By overlooking entire sectors of the economy (including rural economies[243]), public-health implications, impacts on disadvantaged communities, and empirical regional data, the analysis fails to provide decisionmakers and stakeholders with an accurate or sufficient assessment of socioeconomic effects.

C. Reclamation Failed to Adequately Consider Public Health and Safety Impacts

Previous Reclamation EIS's have recognized the need to address the public health and safety concerns that inherently accompany any change to Colorado River operations.[244] The 2023 Supplemental Draft EIS recognized that the Secretary's authority includes the reserved right to operate Reclamation facilities in a manner that is "prudent or necessary for safety of dams, **public health and safety** and other emergency situations."[245] Yet, in the post-2026 Draft EIS, Reclamation fails to mention, much less define "public health and safety," nor identify any measure for evaluating impacts to public health and safety, or consider impacts in any detail. This omission is particularly evident in several key sections of the Draft EIS.

Reclamation fails to analyze the impacts of health and human safety in the proposed alternatives despite including operations that significantly increase the depletion of state or water users' apportionment.[246] For example, in the Supply Driven alternative, Reclamation

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[242] *Supra* § VI.J.

[243] In Nevada, some rural customers have energy portfolios heavily dependent on Hoover energy allocations. These rural areas would be negatively impacted as elevations decline below 1,035. Economic analysis is needed to determine the impacts to rural energy customers.

[244] 2023 Draft Supplemental EIS § 2.7, at 1.3, at 1-8.

[245] 2023 Draft Supplemental EIS § 2.7, at 2-7–2-8 (emphasis added).

[246] Draft EIS, Sec. 2.1, at 1-42.

includes a 96.4% (.29 maf) depletion of Nevada's apportionment but offers no analysis on the depletion's impact to the health and human safety of southern Nevada communities. Further, the shortage allocation models distribute shortages to agencies until the entitlement decreases to zero.[247] As such, health and human safety calculations should be developed, explained, and incorporated into the shortage allocation model to realistically show the impacts of large reductions on cities.

Reclamation should have also considered how Nevada's water use is different than other states. Nevada has maximized conservation through return-flow credits, requiring the removal of decorative turf, and even banning new septic systems to enhance return-flow credits. These efforts helped Southern Nevada reduce its consumptive use by 100,000 afa, while adding over 875,000 new residents. With no significant agricultural uses, there are few if any options to further augment water supplies. With rainfall so low and temperatures so high, additional reductions to Nevada would severely impact urban forests and canopy coverage, and adversely impact the health and human safety in the communities served by SNWA. A more calculated analysis is therefore warranted and should be completed for each of the communities served by SNWA's member agencies, given the significant impacts that will occur if further reductions to Nevada's consumptive use are imposed.

The public health and safety analysis for the Draft EIS contravenes DOI NEPA guidance, which directs agencies to consider the environmental effects on "public health and safety" and the "quality of life of the American people."[248] Reclamation should have applied human health and safety thresholds to assess the effects of proposed shortages to municipal users in Nevada and Arizona whose health and safety may be threatened by implementation of the Action Alternatives. From a water needs perspective, Reclamation could have referred to existing state materials for guidance or insight on identifying the minimum amount of water that might be necessary per person to prevent adverse impacts to human health and safety.[249]

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[247] Draft EIS, Appx. C., Sec. 5.2.1, at C-71 to C-73.

[248] DOI NEPA Implementing Procedures, § 1.2(b)(1), at 5.

[249] *See generally* Southern Nevada Health District, How much water should I store?, https://www.southernnevadahealthdistrict.org/faq-items/how-much-water-should-i-store/ (detailing that water is the "most important supply during an emergency" and that one gallon of water per person per day should be stored in an individual's emergency supplies, with more water for children, nursing mothers, and those with health ailments); *see also* Nev. Admin. Code § 618 Sec. 8.2 (employers must provide employees with potable water that is "fresh, pure and cool" in an amount of one quart per hour per employee for the entire shift with limited exceptions).

Reclamation's failure to consider this available information is inconsistent with NEPA's "hard look" requirement and obligation to "make use of reliable existing data and resources."[250]

D. Reclamation Failed to Adequately Consider Impacts on Lake Powell Hydropower Generation

As indicated in detail above, the Draft EIS does not adequately address repairs to critical infrastructure associated with the Glen Canyon Dam. As such, Reclamation's impacts analysis overstates the reliability of Lake Powell's hydropower generation in low flow years. Reclamation states that the river outlet works "are not designed nor intended for long-term use at low reservoir levels" and that the hollow-jet valves still need major refurbishment.[251]

Yet, Reclamation fails to analyze the associated risks in modeled releases or power generation capacity. Nor does the analysis describe operational limits to power generation, *e.g.*, how long the outlets can run before inspections, what shutdowns would be required during repairs, and how those outages would reduce dependable power during extended low-water periods. Without this logical follow-through, the interested public and decisionmakers cannot fully assess hydropower risks.

Moreover, the Western Area Power Administration ("WAPA") partnered with Argonne and produced a report entitled "Post-2026 Environmental Impact Statement Rate Analysis for the Colorado River Storage Project." The report addresses the WAPA rate impacts in the Upper Basin. In the DEIS, the report is incorporated by reference but the numerical data from that report should have been directly added into the DEIS. They do state the conclusions from the report but do not show any of the supporting analysis. It should be made clear that a direct connection exists to the rate impacts discussed in that report and the health of the Basin Fund which may not be obvious to the reader. In other words, if one or more of the alternatives creates more frequent rate increases which rely on customer willingness to pay them, that translates to risk to the Basin Fund. More importantly, an analysis of similar robustness, and using similar metrics should have been done for Hoover Dam to aid in the understanding of the tradeoff between Glen Canyon Dam and Hoover Dam.

This problem is further compounded by the fact that Reclamation expressly delays any analysis of impacts on electricity rates and reliability. "[252] Postponing this analysis for Lake

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[250] See DOI NEPA Implementing Procedures, § 3.7, at 20.

[251] Draft EIS, Sec. 3.3.1, at 3-25

[252] *Id.*, Sec. 3.15.2, at 3-169 ("DMDU analysis of electricity rates and the market value of the electricity generated at Glen Canyon Dam are being developed and will be included in the Final EIS.").

Powell contravenes NEPA's goals.[253] "NEPA is not designed to postpone analysis of an environmental consequence to the last possible moment. Rather, it is designed to require such analysis as soon as it can reasonably be done."[254] This improperly denies the public the opportunity to make its position known on potential rate issues.[255] In short, the Draft EIS presents elevation-based robustness and vulnerability results, but fails to include in the proposed action needed reparations and stops short of translating current conditions into engineering, dam safety, maintenance, and impacts to power generation.

E. Reclamation Failed to Adequately Consider Protection of Lake Mead Infrastructure and Impacts to Hydropower Generation

The Draft EIS fails to adequately consider and put into plain language the risks to Lake Mead infrastructure and hydropower generation. As mentioned above, the Draft EIS conveys facts and figures to stakeholders and decision makers, but it lacks the necessary detail to explain the practical implications of each alternative.[256]

For Lake Mead infrastructure, the Draft EIS conveys three main points. *First*, the Draft EIS identifies critical water levels for infrastructure and hydropower (975 feet), minimum power pool (950 feet) and dead pool (895 feet).[257] *Second*, the Draft EIS conveys how each alternative performs against those levels by discussing how alternatives keep Lake Mead above 975 feet and how often dead pool-related reductions are avoided.[258] And *third*, the Draft EIS recognizes spillway thresholds at high lake levels.[259]

The status of infrastructure and need for repair at Hoover Dam is discussed in a manner that downplays the need for critical infrastructure repairs and the increased risks to infrastructure associated with certain alternatives (e.g., the No Action Alternative). The Draft

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[253] *Native Vill. of Point Hope v. Jewell*, 740 F.3d 489, 497-98 (9th Cir. 2014).

[254] *Id.* (citation omitted).

[255] *Half Moon Bay Fishermans' Mktg. Asso. v. Carlucci*, 857 F.2d 505, 508 (9th Cir. 1988) (disclosing information after EIS defeats NEPA's goal of encouraging public participation during the decision-making process).

[256] *Earth Island Inst. v. U.S. Forest Serv.*, 442 F.3d 1147, 1160 (9th Cir. 2006) (An EIS "must be organized and written so as to be readily understandable by governmental decisionmakers and by interested non-professional laypersons likely to be affected by actions taken under [the EIS].") (abrogated in part on other grounds by *Winter v. NRDC, Inc.*, 555 U.S. 7 (2008)).

[257] Draft EIS, 3.3.2, at 3-33—36.

[258] Draft EIS, Sec. 3.3.2, at 3-36 (Fig. 3-11), 3-50 (Fig. 3-13).

[259] Draft EIS, Tech. Appx. 15, Sec. TA 15.2.5, at 15-47.

EIS discusses that Hoover Dam's Dam Safety Priority Rating is a Category 5, "Reclamation's lowest-priority rating from dam-safety risk standpoint, indicating that the facility poses the lowest risk to the public."[260] While there is discussion of Hoover Dam's "current condition," the focus of the discussion is a passing overview of past repairs and mention that intake towers and penstocks cannot be replaced.[261] However, there's no discussion about current or near-term future repairs. The Dam is nearly a century old and in the near future will require substantial major planning and investment over and above routine operation and maintenance. Reclamation is aware that operating the Dam below 1035 feet will drastically diminish generation since only 5 of the 17 turbines are equipped with wide head turbines to manage generation at lower lake elevations.[262] Operating at or below 1035 feet will force the 5 wide head turbines to operate around the clock and that then will increase the operating and maintenance needs on those units. And, as Reclamation notes at 1035 feet, "the cost of producing power exceeds its value."[263] Thus, it is imperative on Reclamation to include in its preferred alternative an aggressive schedule for purchasing and installing wide head turbines on the remaining 12 units.

The Draft EIS's effects discussion relating to infrastructure covers the frequency of reservoir elevation drops at Lake Mead.[264] For each alternative, Figure TA 15-11 discusses what percentage of futures Reclamation predicts Lake Mead elevations will be at least 950 feet. Under the No Action Alternative, only 30% of futures will meet the 950 feet elevation.[265] Under the No Action Alternative, operating Lake Mead below minimum power pool and dead pool are likely realities, especially because the Proposed Guidelines will be effective for decades during significant climate uncertainty.

But it is unclear what wear and failure risks will be presented should low elevations last for a significant amount of time or whether certain alternatives will threaten infrastructure more than others. The Draft EIS contains no discussion of mechanical risk, cavitation, vibration, wear, thermal/oxygen shock impacts, or maintenance burdens from Hoover Dam operating at low elevations. These degradation effects are foreseeable, especially based on analogous issues

[260] *Id.*, TA 15.1.3, at 15-5.

[261] *Id.* at 15-10.

[262] *Id.* at 11-12.

[263] *Id.* at 11.

[264] Draft EIS, Sec. 3.15.2, at 3-165.

[265] Draft EIS, Tech. Appx. 15, 15.2.3, at 15-23.

described for Glen Canyon, and Hoover Dam's "critical aging infrastructure."[266] And until Hoover Dam upgrades are fully implemented as Congressionally directed under the Energy and Water Development Appropriations Act of 2026, structural degradation risks will persist. It is unclear whether Hoover Dam infrastructure will deteriorate more under the No Action Alternative than other alternatives (although this is presumably so). The Draft EIS provides no analysis of whether Hoover Dam's operations under long-duration sub-950 or sub-1,035 feet conditions would result in increased wear, unplanned outage risk, or added O&M burden on ratepayers.

And the Draft EIS does not translate this outcome into its other realities— that sustained sub-950 feet elevation or approaching dead pool or sub-1035 feet would severely constrain Hoover Dam releases and hydropower. The Draft EIS does not assess the practical duration and feasibility of meeting Lower Basin municipal and agricultural deliveries under those conditions or the secondary socioeconomic impacts.

Further, just as Reclamation failed to analyze risks to hydropower generation from Glen Canyon Dam associated with the various alternatives, Reclamation fails to consider impacts to loss of hydropower and ratepayer increases from Lake Mead, which is particularly concerning since, as provided above, Reclamation is aware that at 1035', a significant amount of Hoover Dam's hydropower generation is lost without the replacement of wide head turbines on the other 12 units. Yet, the Draft EIS acknowledges without analysis that "[i]mpacts on electricity rates and the market value of the electricity generated by Hoover Dam are being developed and will be included in the Final EIS."[267] Similarly, the corresponding Technical Appendix reviews only how "changes in firm capacity and energy generation impact the electricity rates and the market value of electricity" at Glen Canyon Dam.[268] As more fully discussed above, postponing NEPA analysis of foreseeable impacts to Hoover Dam until the last minute violates NEPA, and denies stakeholders the opportunity to meaningfully engage in Reclamation's analysis.

F. Reclamation Failed to Adequately Consider Impacts to Cultural and Tribal Resources

The Draft EIS discussions of cultural and tribal resource impacts are devoid of any analysis of the real-world effects of changing river flows and lake levels on cultural resources

[266] Statement of Deputy Commissioner David Palumbo, H.R. 7776, the Help Hoover Dam Act, before the House Committee on Natural Resources, Water, Wildlife, and Fisheries Subcommittee (May 22, 2024).

[267] Draft EIS, Sec. 3.15.2, at 3-169.

[268] Draft EIS, Appx. 15, Sec. TA 15.2.7, at 15-54.

and important tribal practices. The primary focus of both discussions is on the number of sites (based on modeled assumptions) that will be either inundated or exposed under the various River management alternatives.[269] The presumption is that inundated sites are better preserved and thus, consistent and higher water levels have less impact to cultural and tribal resources. Thus, the analysis focuses almost exclusively on a detailed textual summary of the modeling results focusing on the number of sites that will be exposed or inundated under various alternatives.

This analysis overlooks an important aspect of the problem in violation of NEPA's "hard look" requirement. Cultural resources and historic sites are not eligible for protection solely because of the physical preservation of artifacts or materials at the site, but also when they possess integrity of location, design, setting, materials, workmanship, feeling, and association, and are associated with events that have made a significant contribution to the broad patterns of our history, are associated with the lives of persons significant in our past, or embody a distinctive characteristic or type, period, or method of construction.[270] This includes properties "of traditional religious and cultural importance to an Indian tribe," which are also eligible for protection.[271] In other words, impacts to cultural resources are more than just impacts to objects and things. Impacts to cultural resources, and particularly to tribal resources, are impacts to experiences—i.e., the opportunity to experience a place with the integrity of location, setting, and feeling that made it eligible for protection in the first place. For a tribal cultural property, the place may be associated with cultural practices, beliefs, and traditions important to maintaining cultural identity and essential to current cultural experiences that have far more to do with setting that preservation of artifacts.

The Draft EIS focuses almost exclusively on physical impacts to archeological resources.[272] The Draft EIS does not include any discussion that captures either quantitatively or qualitatively the potential effects to individuals and communities, and critically to tribes, that may value a site based primarily on its setting or atmosphere and important for its continuing relevance to traditional practices, beliefs, and traditions. This absence is glaringly apparent in relation to the Grand Canyon, which itself is considered by numerous tribes as a traditional cultural property.[273] Yet there is no discussion of cultural experiences of the Canyon, whether

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[269] *See* Draft EIS, Sec. 3.11.2, at 3-123 (cultural resource analysis summarizing "the potential for archeological resources to be exposed").

[270] 36 C.F.R. § 60.4 (2025).

[271] 54 U.S.C. § 302706(a).

[272] *See* Draft EIS, Sec. 3.11.2, at 3-122 (making assumptions about the limits of physical impacts), at 3-128 (limiting analysis of river flows to physical impacts on archeological sites based primarily on aeolian sand modeling).

[273] *Id*., Sec. 3.13.1, at 3-143.

tribal or otherwise, and how those are affected by Colorado River management. Is the culturally significant experience of the Grand Canyon or sites within the Canyon affected by water levels, and if so, how do the alternatives fare in protecting that experience? The Draft EIS does not say.

Another example is the analysis of impacts to natural resources of important to Native peoples, including vegetation. The Draft EIS assumes that the best alternative is the one that maintains historic vegetation patterns, and the remainder of the discussion summarizes the effects to vegetation from Chapter 3.9.[274] It concludes that under all alternatives, "the first decade is expected to have greater variability and reduced woody riparian habitats, compared with historic conditions," and that conditions "improve in the second and third decades."[275] But what vegetations are important to tribal practices and what does reduced woody riparian habitat mean for tribal cultural experiences that may be dependent on native vegetation? Again, the Draft EIS does not say.

Overall, Reclamation's focus on inundation of archeological sites paints too narrow a picture of cultural and tribal resource impacts. Cultural and tribal resources are more than archeological sites—they encompass sites that are made significant by their integrity of place, location, and setting and their connection to history and tradition. In some cases, those sites support contemporary practices of living cultures that help maintain connections to tradition. The failure to discuss impacts to these sites and practices violates NEPA's "hard look" requirement.

X. Reclamation Failed to Designate States and Local Governments as Cooperating Agencies, and Solicit Feedback on Issues Within Their Jurisdiction or Areas of Expertise

An agency should request the participation of cooperating agencies to assist with the analysis when preparing a NEPA document. A cooperating agency is a federal, state, tribal, or local agency "that has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal."[276] The federal agency "shall" "request the participation of each cooperating agency at the earliest practicable time" and "give consideration to any analysis or proposal created by a cooperating agency."[277]

Despite NEPA's focus on public disclosure and participation by interested stakeholders here, Reclamation failed to invite the participation of state, regional, or local Nevada stakeholders as cooperating agencies. SNWA and CRCNV have significant technical expertise in

[274] *Id*., Sec. 3.13.2, at 3-148.

[275] *Id*.

[276] NEPA § 107(a)(3), 42 U.S.C. § 4336a(a)(3).

[277] *Id*. § 4336a(a)(2).

the environmental effects of Colorado River management on Nevada's resources, and a deep understanding of the importance of Nevada's Colorado River apportionment to the economic stability of not only Clark County, but surrounding communities in Nevada. Reclamation did not avail itself of this information and participation.

In addition to NEPA, Section 602(a) of the Colorado River Basin Project Act of 1968[278] requires the Secretary to "propose criteria for the coordinated long-range operation of" Federal reservoirs in the Colorado River Basin (i.e., criteria referred to as Long-Range Operating Criteria or LROC) and Reclamation acknowledges that determinations of annual water release volumes from Glen Canyon Dam pursuant to the LROC are currently implemented through the 2007 Interim Guidelines.[279] Through the contemplated actions in the Draft EIS, the Secretary is proposing to modify how the LROC are implemented but the Secretary may modify the LROC "only after correspondence with the Governors of the seven Colorado River Basin States and appropriate consultation with such State representatives as each Governor may designate."[280] This required consultation has not been completed, and must be conducted before Reclamation can issue a Decision that will modify how the LROC are implemented.

Further, the 2007 Interim Guidelines Record of Decision ("ROD") states that the "Secretary shall first consult with all the Basin States before making any substantive modification to these Guidelines" and "upon a request to resolve any claim or controversy arising under these Guidelines … the Secretary shall invite the Governors of all the Basin States, or their designated representatives…to consult with the Secretary in an attempt to resolve such claim or controversy by mutual agreement."[281] Consultation amounts to more than just providing an opportunity to comment along with the general public.[282] This required consultation has not been completed, and must be conducted before Reclamation can issue a Decision that will modify how the 2007 Interim Guidelines are implemented.

In sum, Reclamation failed to designate state and local governments with expertise as cooperating agencies under NEPA, or to consult with the Colorado River Basin Project Act, and

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[278] Pub. L. 90-537, 82 Stat. 885 (Sep. 30, 1968) (codified at 43 U.S.C. §§ 1501-1556).

[279] *See* Glen Canyon Dam Long-Term Experimental and Management Plan Record of Decision, at 1.

[280] CRBPA § 602(b), Pub. L. 90-537, 82. Stat. 900) (codified at 43 U.S.C. § 1552(b).

[281] Record of Decision, Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operatoins for Lake Powell and Lake Mead (Dec. 2007) at 54, available at https://www.usbr.gov/lc/region/programs/strategies/RecordofDecision.pdf.

[282] *California Wilderness Coal. v. U.S. Dep't of Energy*, 631 F.3d 1072, 1086–90 (9th Cir. 2011) (vacating agency decision where agency failed to engage in "consultation" with the States; merely providing a notice and comment period was insufficient).

its own 2007 Interim Guidelines. Nevada should be invited to participate as a cooperating agency in the NEPA process moving forward, and formal consultation under the Act and 2007 Interim Guidelines must occur before a final decision.

CONCLUSION

Nevada appreciates the opportunity to provide these comments on the Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead Draft EIS. We have a particular interest in avoiding potential impacts from the proposal to Southern Nevada while supporting successful approaches to Colorado River management. Nevertheless, as set out above, Reclamation's Draft EIS fails to comply with the full scope of the agency's NEPA obligations and warrants a draft supplemental EIS given that the many Draft EIS shortcomings undermine NEPA's twin goals of informed decision-making and informed public participation.

Furthermore, Reclamation's Draft EIS has not made sufficient information available for the public, stakeholders, the Basin States, and others to adequately comment on the proposed action. Of particular concern, Reclamation failed to provide information and documentation regarding its plan to remedy the critical infrastructure deficiency at Glen Canyon Dam. For that reason, we prepared and submitted a Freedom of Information Act ("FOIA") request to obtain the needed information given its importance to long-term sustainable operation of the reservoirs and management of Colorado River.[283]

Accordingly, we request that Reclamation consider and incorporate the above comments into a draft supplemental EIS and recirculate that updated analysis for public and stakeholder comment as soon as possible. Specifically, at a minimum, the updated analysis should:

- Carry forward in the alternatives analysis full consideration of the Lower Basin Alternative;
- Include full consideration of the attached Nevada Proposed Approach to Short- and Long-term Operations;
- Include full consideration of alternatives and impacts relating to reparation of the Glen Canyon Dam river outlet works; and
- Include in all future analyses Reclamation's planned compliance with the Law of the River.

Should there be any questions or concerns regarding this letter, please contact John Entsminger at your earliest convenience. Thank you for your consideration of these comments.

[283] *See* FOIA Request to Reclamation (Feb. 23, 2026).

State of Nevada List of Errata and Corrections to BOR DEIS

Chapter No., Appendix No. or Letter, or Other	Page No.	Section, Table, Figure, and Line	Comment	Comment Category
Executive Summary	ES-11	Table ES-1	Unlike the other alternatives, the shortage trigger elevation of 1,160 ft under the "Shortage Guidelines to Reduce Deliveries from Lake Mead" column is missing. This is inconsistent with Figure ES-1 on page ES-15, which identifies all shortage triggers.	Errata
2	2-31	2.8.1, Table 2-8	This section should clarify how to interpret the shortage distributions under the Supply Driven Alt - Priority Scheme. It is easy to misinterpret Table 2-8 to mean that when total Lower Basin shortage falls within the range in each column header, the states' percentages are of the *total* shortage (instead of being additive across columns). E.g.,if total Lower Basin shortage exceeded 1,500 kaf, Nevada's percentage would be 3.33% of the shortage up to 1,500 kaf plus an additional 7.08% of the remaining shortage above 1,500 kaf (not 7.08% of the total shortage, which would suggest significantly deeper cuts).	Errata
3			The text references to the Appendices need to be updated (they don't reference the correct tables and figures).	Errata
3	3-46	3.4.1	Remove "Pre-2027" from the paragraph heading.	Errata
3	3-52	3.4.2, Figure 3-14	This figure would be more helpful in kaf instead of maf, esp. for Nevada, as it only has a 300kaf consumptive use allocation under normal conditions. The numbers should be derived using the specific shortage triggers, amounts, and distributions provided in Ch 2 for each Alternative. A similar figure of percent depletions (percent of apportionments) would also be very helpful here.	Errata
3	3-52 to 56	3.4.2, Issue 3, Shortage and Annual Depeletions	These sections refer repeatedly to Technical Appendix 4 figures showing the "full range" of shortages and depletions for each Alternative, but those figures don't correlate to the actual shortage triggers, which makes the effects analysis difficult to comprehend. See additional comment re: Tech App 4 tables & figures.	Errata

Chapter No., Appendix No. or Letter, or Other	Page No.	Section, Table, Figure, and Line	Comment	Comment Category
3 and TA-9	3-78, 7-ii, 7-52	3.7.2, line 21, Table TA 7-21	Replace "Western Regional Climate Center" with "Western Electricity Coordinating Council" and "WRCC" with "WECC"	Errata
TA-4	4-37 to 4-75; and 4-35 to 4-76	Tables TA 4-18 to 4-39; and Figures TA 4-9 to 4-18	The tables and figures of shortages and depletions rely solely on Lee Ferry general flow categories, which may be useful for making streamlined comparisons, but not for understanding actual impacts on the states and Mexico under the different Alternatives. The Appendix should include tables and figures of the proposed shortages and depletions based on the shortage triggers (lake elevation / storage, total system storage, and Lee Ferry flow) described in Chapter 2 for each Alternative. Chapter 3 should then refer to those tables and figures, as well as provide succinct summary tables.	Errata
TA-7	7-12	Table TA 7-11	The NPS Visibility Summary for Nevada is about Big Bend National Park. The corresponding text references for Great Basin National Park. Should that be Lake Mead NRA?	Errata
3		3.8, 3.10	The Issues sections compare environmental consequences of the different Alternatives, but it is unclear whether the modeling done for those assessments accounted for the specific triggers and actions described in Ch 2 under each Alternative. If it did, the methodology sections should say so. If not, those modeling runs should be analyzed and discussed.	Errata
3	3-184	3.17, Population para 3	Paragraph 3 mentions Nevada's urban growth but fails to mention its sustainable water use, including the Las Vegas metropolitan area's indirect potable reuse system and reductions in consumptive water use over the past two decades.	Errata
3	3-189	3.17.2, Issue 1	"Table 2-10, Summary of Potential Effects, Population and Lands, in Chapter 2" is mentioned twice, but no such table exists. The intended reference appears to be	Errata

Chapter No., Appendix No. or Letter, or Other	Page No.	Section, Table, Figure, and Line	Comment	Comment Category
			Table TA 17-17, Summary of Potential Effects on Domestic Water by Alternative.	
3	3-201	3.19.1	Reclamation incorrectly states in Chapter 3, Sec. 3.19.1, page 3-201 that the "Grand Canyon Protection Act of 1992 specifically calls for the conservation of visual resources." It should instead correctly state that the Grand Canyon Protection Act of 1992 directs the Secretary to operate Glen Canyon Dam "in such a manner as to protect, mitigate adverse impacts to, and improve the values for which the Grand Canyon National Park and Glen Canyon National Recreation Area were established, including but not limited to natural and cultural resources and visitor use." (P.L. 102-575, Title XVIII, Sec. 1802).	Errata
References	References -17		For USFWS 2007 reference, add: https://www.usbr.gov/lc/region/programs/strategies/BOFinal.pdf.	Errata
Appendix A	A-29	Table A-8	Replace "Cooperative Conservation" with the "Maximum Operational Flexibilities"	Errata
Executive Summary	ES-8	ES.2.2	Typo (board v. broad): "This Draft EIS includes the following five alternatives that capture an appropriately board range of operational elements and potential environmental impacts:"	Errata
Appendix A	A-37	Paragraph 4	Typo: "Theis remaining…" should be "This remaining…"	Errata
Appendix B	B-7	B.3.2.2	"while water users who are not signatories to the DCP can take delivery when Lake Mead's pool elevation is above 1.075 ft at the start of the calendar year. " **Typo:** 1.075 ft should be 1,075 ft	Errata
Appendix I	I-9, I-10, I-1q, I-12, and I-13	Figure I-4, I-5, I-6, I-7, and I-8	The note below the figure indicates that the maximum shortage in the No Action Alternative is 1.375 maf. However, the maximum shortages are actually 0.6 (I-4), 1.48 (I-5), 3.0 (I-6), 4.0 (I-7), and 2.1 maf (I-8) and are correctly depicted by the dashed reference line in the Total Annual Shortage box plots. This inconsistency across each of the figure footnotes may cause misinterpretation of the charts.	Errata

State of Nevada List of Edits and Corrections to BOR DEIS (cont'd)

Chapter No., Appendix No. or Letter, or Other	Page No.	Section, Table, Figure, and Line	Comment	Comment Category
Appendix K	K-5	K.2.2	"The examples in Table K-2 use an Upper Basin depletion demand of 5.835 maf (the average depletion demand over the 2027-2060 modeling period), resulting in the proportional reduction to the United States equal to the sum of Upper and Lower Basin United States shortages divided by 13.335 maf (7.5 maf plus 5.835 maf)" **Incorrect reference:** The table reference should be Table K-3 instead of Table K-2.	Errata
Executive Summary	ES-32	Table ES-8	**Footnote:** There is a subscript referencing footnote 1 on the Basic Coordination Alt for the "Effects of modeling assumptions" category, but that subscript should be referencing footnote 2.	Errata
1	1-2	1.1, Footnote 2	**Typo:** In footnote 2, should be "drier" rather than "dryer".	Errata
3	3-25	3.3.1	**Typo:** In the "Upper Basin - CRSP Upper Initial Units" paragraph, 4th line, "Blu**m**e Mesa" should be "Blue Mesa".	Errata
3	3-28	3.3.2	**Typo:** Last line on this page there is an extra "(" before "CCS Comparative Baseline".	Errata
3	3-54	3.4.2	References to TA 4 figure numbers throughout this section appear to be off. For example, the Arizona section on pg 3-54 references Figure TA 4-12 in TA-4, but that figure in TA-4 is showing annual shortage for Nevada rather than annual depletions in Arizona (which would be figure TA 4-13). This appears to be the case for at least a few other TA 4 figure references.	Errata
Appendix C	C-18	C.4.2.1, first paragraph on page C-15	**Section reference:** The reference to Section C.**3**.1 should be a reference to Section C.**4**.1	Errata
Appendix C	C-72	C.5.2.1, Stage 2 calculations	**Number typo:** The Stage 2 calculations for NV and AZ show total PPR volumes as 3,408,035. Elsewhere in the appendix the total PPR volume is shown as 3,407,835.	Errata
Appendix C	C-74	C.5.3.4, first sentence	**Typo:** The reference to "this Appendix **E**" should say "this Appendix **C**".	Errata

Chapter No., Appendix No. or Letter, or Other	Page No.	Section, Table, Figure, and Line	Comment	Comment Category
Appendix C	C-92	C.6.1, first sentence	**Section reference:** The reference to Section C.**3**.1 should be a reference to Section C.**4**.1	Errata
Appendix C	C-121 - C-122	C.7.3.1	**Number typo:** The Stage 2 calculations for AZ and CA show the total non-tribal PPRs as 2,716,679, but based on Table C-31 that value is just the CA non-tribal PPR total and the actual non-tribal PPRs total is 2,904,522 af.	Errata
Appendix F	F-1	F.1	The first paragraph in section F.1 references the 'DMDU Overview and Approach' as Appendix **D**, but the DMDU appendix is Appendix **E**.	Errata
Appendix F	F-5	F.4	**Typo:** 4th line in the first paragraph of Section F.4 says "**the** correspond to…", should be "**they** correspond to…"	Errata
TA-9		9	Environmental consequences for vegetation do not account for groundwater depth/decline or changes in soil salinity which could affect vegetation outcomes under the alternatives; recommend adding a subsection explicitly identifying ecological drivers that are not modeled and/or providing a qualitative assessment of how various ecological drivers are excluded	Errata
TA-3	3-30	TA 3.2.1	The Lake Mead section says that Lake Mead's total live storage capacity at elevation 1,219.6 ft is 28.7 maf, excluding flood control storage. This conflicts with Ch. 3 pg 3-27 that says Lake Mead's total live storage capacity at elevation 1,219.6 ft is 26.12 maf excluding flood control.	Errata
TA-10	10-7	10.2.1	Similar to the above comment; assumptions of impacts to terrestrial wildlife and special status species being driven by vegetation does not account for groundwater depth/decline or changes in soil salinity which could affect vegetation outcomes under the alternatives, thus lacking analysis for potential habitat degradation/loss for special status species because of said ecological drivers	Errata
Appendix B	B-22	B.6.2.1, Footnote 12	Footnote 12: "The modeling erroneously excludes the conversion of system efficiency ICS to the Lake Mead	Mistake/Missing Info

Chapter No., Appendix No. or Letter, or Other	Page No.	Section, Table, Figure, and Line	Comment	Comment Category
			mechanism." *This implies that this was a mistake in the modeling. More information is needed.*	
Appendix B	B-29	B.6.3.1	"For modeling purposes, it was intended that GRIC's pre-2027 EC-ICS that was assumed to exist on December 31, 2026 (Table B-1) would be converted to the Protection Pool on January 1, 2027. In the Enhanced Coordination Alternative, the existing GRIC EC-ICS (286,708 af) was erroneously transferred to the Lake Mead mechanism - State Pools."*This implies that this was a mistake in the modeling. More information on the impacts of this mistake are needed.*	Mistake/Missing Info
Appendix B	B-31	B6.3.3, Footnote 16	"this modeling erroneously includes unused tribal water associated with the Hopi Tribe. As such, the range here does not match 10% of the total shown in Appendix H, Table H-4. The maximum magnitude of the discrepancy is 868 acre-feet in 2039-2060." *This implies that this was a mistake in the modeling. More information on the impacts of this mistake are needed.*	Mistake/Missing Info
Appendix B	B-36	B.7.1.3, Footnote 20	Regarding the Max. Flex scenario, footnote 20 states: "The modeling erroneously excludes the conversion of system efficiency ICS to the Lake Mead mechanism." *This implies that this was a mistake in the modeling. More information on the impacts of this mistake are needed.*	Mistake/Missing Info
Appendix B	B-43	B.8.2.2, Footnote 26	"The logic included in CRSS erroneously did not apply this constraint to the delivery/conversion of California's storage credits." *This implies that this was a mistake in the modeling. More information on the impacts of this mistake are needed.*	Mistake/Missing Info
Appendix H	H-16	Table H-7; Footnote 27	"The CRSS modeling erroneously includes unused tribal water associated with the Hopi Tribe. As such, the volumes here do not match 10 percent of the total in Table H-4 as they should. The maximum magnitude of the discrepancy is 868 acre-	Mistake/Missing Info

Chapter No., Appendix No. or Letter, or Other	Page No.	Section, Table, Figure, and Line	Comment	Comment Category
			feet in 2039-2060". *More information about the impacts of this mistake is needed.*	
Appendix K	K-12	K.3.4	"The maximum annual delivery to Mexico should be 1.7 maf based on the 1944 Water Treaty (additional deliveries to Mexico of up to 0.2 maf are assumed to occur when Lake Mead is in flood control operations or 70R Surplus). An error in the model resulted in the maximum of 1.67 maf, which will be addressed for the Final EIS." *More information about the impacts of this error should be addressed.*	Mistake/Missing Info
2	2-7	2.4.1.1	The last paragraph on this page states that the elevations and volumes adopted in the 2007 IG ROD are assumed for this alternative (No Action). The shortage volumes are close to the 2007 IG volumes but don't match up exactly (383k, 487k, and 625k vs 400k, 500k, and 600k). Please add clarification on why the 400k, 500k, and 600k volumes were chosen.	Mistake/Missing Info
Appendix C	C-92 - C-94	C.6.2.1, Percent of Shortage calculations	In the Lower Basin Priority SAM, the % shortage to each state across the different reduction zones is not comparable. The % shortage to each state in the Initial Reduction Zone is based on total lower basin shortages (LB States + Mexico), but the % shortage to each state in the Initial and Secondary Basin-wide Reduction Zones are based only on the total lower basin state shortage (not including Mexico). Consistency across all reduction zones (either % of LB State shortage or % of total LB Shortage) would allow the reader to better evaluate impacts to each state across the reduction zones. Using the % of total LB Shortage (including Mexico) in these calculations would be more consistent with Table 2-8 in Ch. 2.	Mistake/Missing Info
Appendix C	C-18-20, C-72-73, C-93-94, C-120-122,	Percent Shortage Calculations	The % shortage to each state across the different SAMs/ADMs is not comparable throughout the Appendix. For some of the SAMs/ADMs, the percent shortage	Mistake/Missing Info

Chapter No., Appendix No. or Letter, or Other	Page No.	Section, Table, Figure, and Line	Comment	Comment Category
	and C-171-172		calculations are percents of just the total Lower Basin state shortage (ex: Priority calcs on pages C-18 to C-20). Other SAMs/ADMs (ex: LB Pro Rata calcs on pages C-171 to C-172) show a percent shortage distribution based on total Lower Basin shortage (LB States + Mexico). It would be helpful if the percents of shortage for each state were comparable across the SAMs/ADMs in the Appendix. Showing the percent of total Lower Basin shortage rather than just Lower Basin state shortage would allow for better cross reference to Tables 2-1, 2-2, 2-3, and 2-8 in Ch. 2.	
Appendix A	A-16	A.6.2, Lake Powell Inflow Forecast	More context around using the P26 Operations Exploration Tool is needed here: "monthly input natural flow and Upper Basin demands as the predictors using data from the Colorado River Post-2026 Operations Exploration Tool"	Mistake/Missing Info
Appendix H	H-10-11 & H-16	Table H-4 & Table H-7 (footnote)	A modeling error exists between tables H-4 and H-7 (addressed by a footnote) but should be corrected in the final EIS.	Mistake/Missing Info

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February 26, 2026

T E C H N I C A L M E M O R A N D U M: L O W E R B A S I N A L T E R N A T I V E

This memorandum documents modeling performed to simulate the Lower Basin Alternative that was submitted by the Lower Basin States on March 6, 2024, and revised on January 13, 2025. This Memorandum compares simulation results to alternatives published in the Bureau of Reclamation (Reclamation) Draft Environmental Impact Statement (DEIS) for Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead. Reclamation published the Notice of Availability in the Federal Register on January 16, 2026 (Bureau of Reclamation, 2026a).

Key Findings

Southern Nevada Water Authority (SNWA) configured Reclamation's Colorado River Simulation System (CRSS) model to represent and simulate the Lower Basin Alternative and compare the results to the DEIS alternative models using various performance metrics. The key findings resulting from this analysis are:

- The Lower Basin Alternative performs as well as, and in some cases better than, the DEIS alternatives in meeting the stated purpose and need. For that reason, it was prepared by the Lower Basin States for submission to Reclamation for inclusion as an alternative carried forward in the DEIS for the benefit of all stakeholders.
- The simulated near-term system conditions are highly sensitive to the forecast used to set the starting modeling conditions. What is considered favorable or less favorable operating conditions for Lake Powell and Lake Mead are largely shaped by the initial reservoir conditions used in the analysis, and relying on an outdated forecast to initialize the model does not accurately reflect reasonably foreseeable system conditions and understates the near-term resource risks associated with reservoir elevations.

Purpose and Scope

Modeling was performed for the purpose of analyzing the Lower Basin Alternative and assessing its performance by comparing the simulation results against the DEIS alternatives using a range of metrics. This analysis was necessary because the comprehensive Lower Basin Alternative was excluded as an alternative in the DEIS. The scope of the analysis included representing the

Lower Basin Alternative in a CRSS model originally developed for use in the DEIS alternatives analysis, and simulating system operations under the same hydrologic and initial reservoir conditions applied to model simulations of the DEIS alternatives. A supplemental set of simulations was also performed to evaluate the model's sensitivity to the initial system conditions. Simulation results were evaluated using performance metrics used by the Lower Basin States during the development of the Lower Basin Alternative, as well as those presented in the DEIS.

Technical Approach

The technical approach used to complete the analysis included five elements: (1) assemble DEIS alternative models, (2) simulate DEIS alternatives using the same hydrology and initial conditions as those used in the DEIS, (3) develop and simulate the Lower Basin Alternative model using the same hydrology and initial conditions as those used in the DEIS, (4) simulate DEIS and Lower Basin Alternative models using updated initial system conditions (supplemental simulations), and (5) process results of Lower Basin Alternative model and DEIS alternative models and compare performance metrics.

Attachment 1 provides a detailed explanation of the modifications made to the model used to simulate the DEIS alternatives to accurately represent the Lower Basin Alternative, as well as a description of the initial system conditions used in the supplemental simulations.

DEIS Alternative Models

The DEIS considers five scenarios under which future operations may occur: a "No Action" alternative, which would revert river management to pre-2007 operations, and four action alternatives (Bureau of Reclamation, 2026b).

1. Basic Coordination Alternative
2. Enhanced Coordination Alternative
3. Maximum Operational Flexibility Alternative
4. Supply Driven Alternative

It should be noted that the Supply Driven Alternative was modeled in the DEIS using two shortage distribution schemes: priority and pro rata. This analysis only considers the results of the model configured with the pro rata shortage distribution scheme (Attachment 1).

The RiverWare model files and other corresponding files for each alternative were acquired from Reclamation on January 28, 2026. The model simulations were performed in RiverSMART, a RiverWare simulation management tool, using a RiverSMART file provided by Reclamation.

Lower Basin Alternative Model

The Lower Basin States prepared a Post-2026 DEIS alternative that was first submitted to Reclamation on March 6, 2024, and resubmitted on January 13, 2025, with a revision to Lake Powell operations. The Lower Basin Alternative outlined specific operational criteria for Lake

Powell water-year releases, annual basinwide water delivery reductions, and surplus guidelines. It also included conceptual strategies for storage and delivery of conserved water and recognized that protecting Glen Canyon Dam infrastructure could require releases from the Upper Initial Units (UIU).

The Lower Basin States continued collaborating with Reclamation through summer 2025 to further refine the Lower Basin's preferred strategies for surplus guidelines and for the storage and delivery of conserved water for inclusion in the DEIS. A review of the DEIS model files indicated that several of these updated details were carried forward into certain DEIS alternatives. Because the Lower Basin States had general agreement on these refined mechanisms, they were included in the Lower Basin Alternative model despite not being part of the formal proposal from March 2024 or January 2025. The following sections outline the process taken to create the Lower Basin Alternative model.

Model Development

Lake Powell releases, water delivery reductions, and the storage and delivery of conserved water were the main aspects of the Lower Basin Alternative that needed to be implemented into a DEIS model framework. As detailed in Attachment 1, the Supply Driven Alternative model was identified as the most suitable DEIS modeling framework for integrating the Lower Basin Alternative details.

Model Inputs

Reclamation used a Decision Making under Deep Uncertainty (DMDU) approach to select an ensemble of hydrologic traces that captured a wide range of potential hydrologic futures in their DEIS modeling (Bureau of Reclamation, 2026c). This analysis of the DEIS alternatives used this same 400-trace ensemble used by Reclamation for the DEIS. A more thorough explanation of the hydrology used in the DEIS is included in Attachment 1.

Initial Conditions

Reclamation produces a short-term forecast of Colorado River reservoir conditions (storage, elevation, releases, etc.) each month using their Colorado River Mid-term Modeling System (CRMMS) model. The hydrology input to the CRMMS model is configured to use the Ensemble Streamflow Prediction (ESP) product, which is a series of inflow hydrology forecasts produced by the Colorado Basin River Forecast Center (CBRFC), collectively referred to as CRMMS-ESP (Bureau of Reclamation, 2024).

Results from the short-term CRMMS-ESP model can be used to initialize the starting state of reservoir conditions for long-term model runs performed in CRSS. For the DEIS, Reclamation used three forecasts of end-of-calendar-year (EOCY) 2026 reservoir conditions (storage, elevation, and releases) for the Colorado River system (Reservoir Conditions) from the November 2024 CRMMS-ESP model as the initial model state for each DEIS alternative model (Bureau of Reclamation, 2026d). These same initial conditions were also used in this analysis to replicate the modeling data used in the DEIS analysis. A supplemental set of simulations was also performed

using the forecasted EOCY 2026 Reservoir Conditions from the January 2026 CRMMS-ESP model to analyze the model's sensitivity to prescribed initial conditions. Included in Attachment 1 is an explanation of the CRMMS model and its application in forecasting near-term system conditions used for this analysis.

Explanation of Performance Metrics

Correlation

Table 1 and **Table 3** show a correlation of EOCY elevations for Lake Powell and Lake Mead. The correlation is divided into four quadrants representing the percentage of occurrences when Lake Powell is either above or below 3,500 feet while Lake Mead is above or below 975 feet. Quadrant 1 (Q1) includes paired EOCY reservoir elevations that remain above critical elevations for both reservoirs, indicating the most favorable operating conditions. Conversely, Quadrant 3 (Q3) includes paired elevations below the critical elevations, indicating the least favorable operating conditions. Quadrant 2 (Q2) reflects conditions more favorable to Lake Mead, while Quadrant 4 (Q4) reflects conditions more favorable to Lake Powell.

Robustness

Robustness is a measure of how successful a model is in meeting a certain objective and is generally expressed as the percentage of futures where that objective is met (Bureau of Reclamation, 2026e, p. 3-15). Alternatives with higher percentages are more robust than alternatives with lower percentages. For example, one objective could be for Lake Mead to stay above elevation 975 feet in 90% of months in the simulation period. To compute robustness for this objective, one would count the number of futures where Lake Mead is above elevation 975 feet in at least 90% of months and divide that by the total number of futures in the simulation period. Heat maps are used to visualize the robustness percentages of several objectives for each alternative as shown in **Figure 1, Figure 2,** and **Figure 5**.

Summary Statistics Visualization

Elevations at Lake Powell and Lake Mead are key indicators of Colorado River System health and are important metrics to evaluate when comparing alternatives. End-of-water-year (EOWY) elevations at Lake Powell and EOCY elevations at Lake Mead were analyzed in the DEIS (Bureau of Reclamation, 2026e). These statistics of Lake Powell and Lake Mead elevations are best represented as box plots because these simple figures can summarize the results across all traces and model timesteps, while providing a clear visual comparison of the summary statistics for each alternative.

Box plots can be interpreted as follows: the box shows the range between the 25th (first quartile) and 75th (third quartile) percentiles of elevations, known as the interquartile range, which encompasses the middle 50 percent of the data points. The whiskers extend to the minimum and maximum values. The dot in the center of the box represents the average value and the line across the box represents the median value. These box plots are shown in **Figure 3** and **Figure 7**.

Results Comparison of Lower Basin and DEIS Alternative Models

This section shows the results generated from the model output for the initial conditions used in the DEIS (November 2024 CRMMS-ESP). The comparative evaluation draws on model results from the entire simulation period (2027–2060) and applies similar performance metrics used by Reclamation in assessing the DEIS alternatives, as well as those used by the Lower Basin States during the development of the Lower Basin Alternative.

As described previously, Reclamation used three forecasts of EOCY 2026 Reservoir Conditions from the November 2024 CRMMS-ESP model as the initial state for each DEIS alternative. The results presented below were generated from internal modeling performed by SNWA staff using the raw CRSS model files provided by Reclamation, along with the Lower Basin Alternative model described in this memo. No changes were made to the raw CRSS model files, and there is no reason to believe the modeling outputs used in this analysis differ from those produced by Reclamation for the DEIS.

Correlation

Higher percentages signify a greater concentration of paired EOCY elevations within that quadrant, indicating a greater probability of that operating condition occurring. Across all alternatives, the greatest concentration of paired EOCY elevations occurs in Q1, with the Lower Basin Alternative having the highest concentration of the more favorable operating conditions. In contrast, the No Action Alternative shows the highest concentration of paired EOCY elevations in Q3 by a wide margin compared to the other alternatives, while the Lower Basin Alternative has the second-lowest concentration in Q3, exceeding only the Supply Driven Alternative. Among the six alternatives, the Lower Basin Alternative shows the second-least disparity between the concentration of paired elevations in Q2 and Q4, indicating it provides a more balanced risk of one reservoir experiencing more favorable operating conditions compared with most other DEIS alternatives.

Table 1
Correlation of Lake Powell and Lake Mead EOCY Elevations

Alternative	Mead Above 975' & Powell Above 3500' (Q1)	Mead Above 975' & Powell Below 3500' (Q2)	Mead Below 975' & Powell Above 3500' (Q4)	Mead Below 975' & Powell Below 3500' (Q3)
No Action	57.5%	4.0%	13.9%	24.6%
Basic Coordination	76.3%	6.1%	5.4%	12.2%
Enhanced Coordination	93.5%	0.3%	3.9%	2.3%
Maximum Flexibility	95.1%	0.2%	3.8%	1.0%
Supply Driven	79.1%	14.6%	1.4%	5.0%
Lower Basin	96.1%	0.6%	3.0%	0.4%

Robustness

The Maximum Flexibility Alternative model employs operating rules for Lake Powell releases and Lower Basin shortages that most closely resemble those in the Lower Basin Alternative and therefore would be expected to have similar robustness (Bureau of Reclamation, 2026b, Section 2.7). While this holds true for keeping Lake Powell above elevation 3,500 feet, the Lower Basin Alternative shows greater persistence in protecting Lake Mead's critical elevation. Additionally, the Enhanced Coordination Alternative uses shortage guidelines that are similar to those in the Lower Basin Alternative but differ by the magnitude of the reductions and how system contents are determined, including the number of combined reservoirs and the use of the conservation pool used when calculating the effective storage (**Figure 1**) (Bureau of Reclamation, 2026b, Section 2.6).

Percent of futures in which Lake Powell elevation stays above 3,500 feet in the percent of months specified by each column

Alternative	>60% of Months	>70% of Months	>80% of Months	>90% of Months	100% of Months
No Action	72%	63%	53%	38%	20%
Basic Coordination	84%	77%	68%	54%	25%
Enhanced Coordination	98%	98%	96%	93%	82%
Maximum Flexibility	99%	99%	98%	97%	87%
Supply Driven	86%	76%	65%	44%	24%
Lower Basin	100%	100%	99%	98%	81%

Figure 1
Robustness Heat Map for the Objective of Keeping Lake Powell Above 3,500 feet

The difference in Lake Mead's robustness in staying above the critical elevation between the Enhanced Coordination and Lower Basin Alternative is most likely attributed to differing assumptions used in the effective storage calculation. Since the Lower Basin Alternative does not include Lake Mead's conservation pool in making shortage determinations (operationally neutral), while the Enhanced Coordination Alternative does and both alternatives allow for stored water to offset reductions, it's only the Lower Basin Alternative where those conversions will benefit the system contents while a conversion in the Enhanced Coordination Alternative would negate the system benefits of any prescribed reduction (up to 1.5 maf) (**Figure 2**) (Bureau of Reclamation, 2026b, Section 2.6).

Percent of futures in which Lake Mead elevation stays above 975 feet in the percent of months specified by each column

Alternative	>60% of Months	>70% of Months	>80% of Months	>90% of Months	100% of Months
No Action	52%	45%	37%	31%	25%
Basic Coordination	80%	76%	70%	64%	58%
Enhanced Coordination	94%	92%	89%	84%	75%
Maximum Flexibility	95%	94%	92%	88%	79%
Supply Driven	93%	92%	89%	85%	80%
Lower Basin	96%	96%	94%	92%	85%

Figure 2
Robustness Heat Map for the Objective of Keeping Lake Mead Above 975 feet

Summary Statistics Visualization

Across all DEIS alternatives, Lake Powell and Lake Mead demonstrate substantial variability in Reservoir Conditions, as shown by the wide interquartile ranges in each alternative's box plot (**Figure 3**). For example, the Enhanced Coordination and Maximum Flexibility alternatives show a 70- to 80-foot operating range in Lake Powell, while Lake Mead exhibits nearly double that with a 120- to 140-foot range (50- and 60-foot different, respectively). In contrast, although the Basic Coordination and Supply Driven alternatives produce Lake Mead operating ranges similar to the other DEIS alternatives, they result in significantly wider operating ranges for Lake Powell. The Lower Basin Alternative shows less disparity in operating ranges between the two reservoirs with interquartile ranges differing by less than 30 feet, suggesting slightly more balanced and coordinated operations between them compared to some DEIS alternatives.

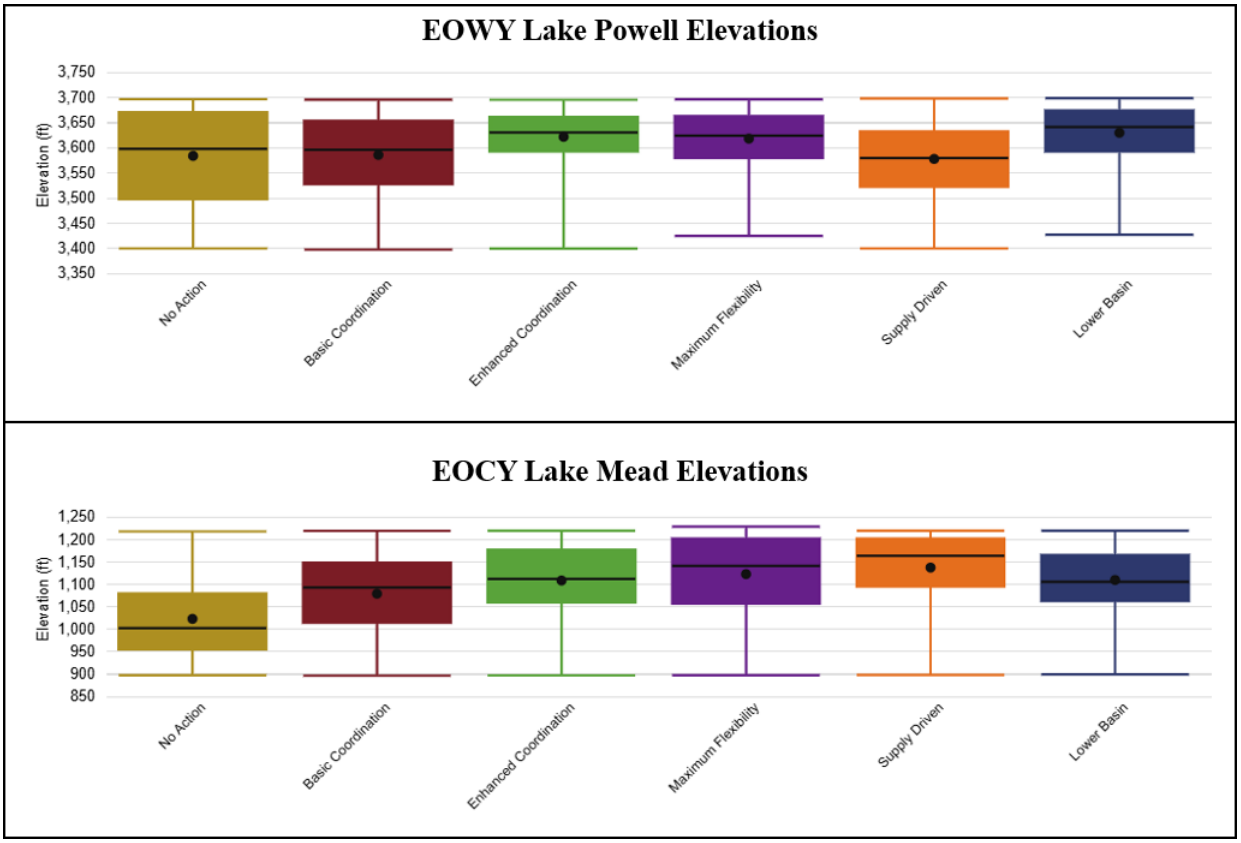

Figure 3
Summary Statistics of Lake Powell and Lake Mead Elevations

Performance Assessment

The performance of the Lower Basin Alternative is generally comparable to that of the Enhanced Coordination and Maximum Flexibility alternatives, and consistently outperforms the No Action, Basic Coordination and Supply Driven alternatives. This performance is reflected in the alternative's ability to maintain a narrow range of operational disparity between Lake Powell and Lake Mead, thereby producing favorable conditions that are more balanced across reservoirs and minimizing the likelihood that one reservoir benefits at the expense of the other. Moreover, the Lower Basin Alternative demonstrates a stronger and more sustained protection of Lake Mead's critical elevation, underscoring that value of incorporating operational neutrality when offsetting reductions into future shortage guidelines.

Sensitivity of Reservoir Elevations to Initial Conditions

This section shows the results generated from the model output for initial conditions used in the supplemental model runs. The comparative evaluation draws on model results from the near-term simulation period (2027–2036) and applies similar performance metrics used by Reclamation in assessing the DEIS alternatives, as well as those used by the Lower Basin States during the development of the Lower Basin Alternative.

As noted earlier, a supplemental set of simulations was conducted using the January 2026 CRMMS-ESP forecast to evaluate the sensitivity of simulated reservoir elevations to initial conditions (Bureau of Reclamation, 2026d). There was no explanation provided by Reclamation in the DEIS of the reasoning behind selecting the initial reservoir conditions used in their analysis. With no guidance to follow, the Minimum Probable, Most Probable, and Maximum Probable forecasts from the January 2026 CRMMS-ESP model were used in this analysis to represent the "Low", "Mid" and "High" model initialization states, respectively.

As shown in **Table 2**, the forecasted EOCY 2026 reservoir elevations range from 3,499 to 3,629 feet for Lake Powell and from 1,038 to 1,078 feet for Lake Mead. The differences in starting conditions span –63 to –12 feet for Lake Powell and –16 to +15 feet for Lake Mead.

Table 2
Forecasted EOCY 2026 Reservoir Elevation

Initialized Model State	Nov 2024 CRMMS-ESP			Jan 2026 CRMMS-ESP			Difference	
	Trace	Lake Powell	Lake Mead	Trace	Lake Powell	Lake Mead	Lake Powell	Lake Mead
Low	14	3,511	1,038	2 (Min)	3,499	1,053	(12)	15
Mid	12	3,574	1,063	3 (Most)	3,514	1,060	(60)	(3)
High	6	3,629	1,079	1 (Max)	3,566	1,063	(63)	(16)

Figure 4 shows the average Lake Powell elevation using the "Mid" model initialization state for both the November 2024 and January 2026 No Action Alternative simulations. The No Action Alternative is shown here solely for illustrative purposes as it demonstrates the same pattern shown across all alternatives, which is that the model is most sensitive to initial conditions during the first

five to ten years of the simulation, after which the results converge toward nearly identical trajectories.

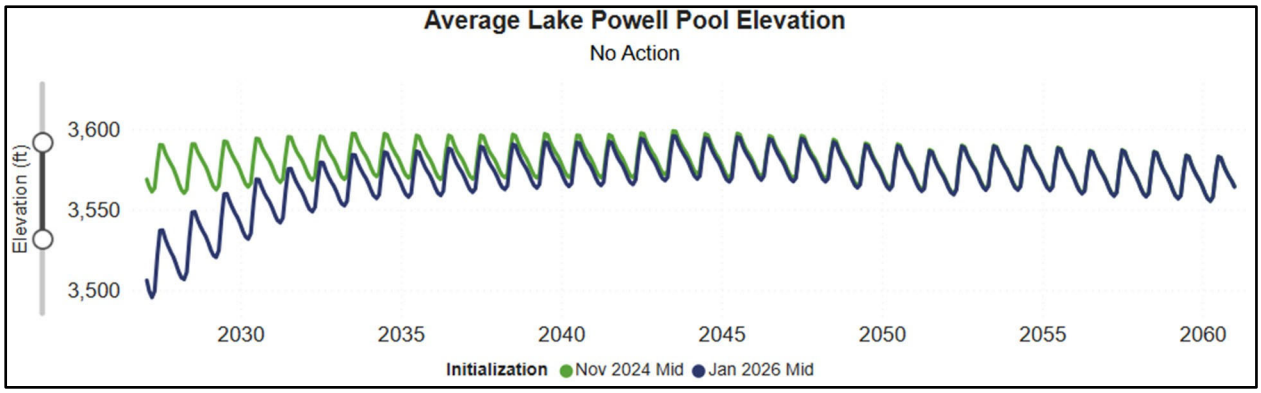

Figure 4
Example of Differences in Simulated Reservoir Elevations Resulting from Different Initial Conditions

To assess the near-term resource risk associated with reservoir elevations, the model results were limited to the first ten years of each simulation and analyzed using the correlation, robustness and summary statistics visualization methods applied in the Lower Basin and DEIS alternatives model comparison.

Correlation

As shown in **Table 3,** the near-term distribution of paired EOCY elevations is consistent with the earlier comparison of the Lower Basin Alternative and the DEIS alternatives where the largest share of paired elevations occurs in Q1, while the remaining quadrants contain smaller and more variable concentrations. However, when comparing the distribution across the different initial reservoir elevations, the Q1 paired elevations originating from the November 2024 forecast shift out of Q1 and are redistributed across the other quadrants, with Q2 showing the most notable increase. This suggests that the updated initial conditions influence the simulated elevation of Lake Powell to a greater extent than Lake Mead.

Table 3
Correlation of Lake Powell and Lake Mead EOCY Elevations (2027-2036)

	Mead Above 975' & Powell Above 3500' (Q1)		Mead Above 975' & Powell Below 3500' (Q2)		Mead Below 975' & Powell Above 3500' (Q4)		Mead Below 975' & Powell Below 3500' (Q3)	
Alternative	**Nov 2024**	**Jan 2026**	**Nov 2024**	**Jan 2026**	**Nov 2024**	**Jan 2026**	**Nov 2024**	**Jan 2026**
No Action	71.0%	61.4%	8.1%	12.5%	4.8%	5.9%	16.1%	20.2%
Basic Coordination	85.3%	80.3%	6.0%	8.2%	2.6%	3.3%	6.2%	8.2%
Enhanced Coordination	95.7%	94.1%	0.6%	1.3%	2.6%	2.8%	1.1%	1.7%
Maximum Flexibility	97.0%	95.6%	0.1%	0.5%	2.3%	3.0%	0.6%	0.9%
Supply Driven	88.5%	80.3%	7.9%	16.3%	1.3%	1.0%	2.3%	2.4%
Lower Basin	96.7%	95.2%	1.0%	1.8%	2.0%	2.5%	0.4%	0.5%

These findings suggest that what is considered favorable or less favorable operating conditions for Lake Powell and Lake Mead are largely shaped by the initial reservoir conditions used in the analysis, the magnitude of which depends on the DEIS alternative being evaluated.

Robustness

The difference in robustness of keeping Lake Powell above 3,500 feet between the two models tends to shift downward across each alternative and objective criterion (**Figure 5).** These results are not surprising considering the January 2026 model generally began with lower starting conditions, making it more difficult to meet or exceed the objective thresholds. The Supply Driven Alternative was the alternative most sensitive to the starting conditions, with the share of futures in which Lake Powell remains above 3,500 feet declining by up to 31 percent. The Lower Basin Alternative shows minimal sensitivity to the starting conditions for most Lake Powell objectives. The one noticeable exception, which is shared across all alternatives, is a substantial decline in their robustness at the absolute protection level (100%).

November 2024 CRMMS-ESP

Percent of futures in which Lake Powell elevation stays above 3,500 feet in the percent of months specified by each column

Alternative	>60% of Months	>70% of Months	>80% of Months	>90% of Months	100% of Months
No Action	74%	69%	63%	55%	41%
Basic Coordination	89%	85%	80%	73%	53%
Enhanced Coordination	99%	99%	98%	97%	91%
Maximum Flexibility	100%	99%	99%	98%	97%
Supply Driven	93%	89%	83%	73%	58%
Lower Basin	99%	99%	98%	97%	92%

January 2026 CRMMS-ESP

Percent of futures in which Lake Powell elevation stays above 3,500 feet in the percent of months specified by each column

Alternative	>60% of Months	>70% of Months	>80% of Months	>90% of Months	100% of Months
No Action	65%	59%	52%	42%	21%
Basic Coordination	84%	79%	72%	62%	34%
Enhanced Coordination	98%	97%	96%	92%	65%
Maximum Flexibility	99%	99%	98%	96%	65%
Supply Driven	83%	76%	66%	53%	27%
Lower Basin	99%	98%	97%	93%	59%

Figure 5
Robustness Heat Map for the Objective of Keeping Lake Powell Above 3,500 feet (2027-2036)

The robustness of each alternative in meeting the Lake Mead objectives shows minimal sensitivity to the initial reservoir conditions (**Figure 6**). This pattern is likely driven by two factors: (1) the difference between the CRMMS forecasts for Lake Mead are much smaller than those for Lake Powell, and (2) this analysis draws from an aggregated dataset that combines simulations from all three initial conditions. As shown in **Table 2**, the Low and High initial conditions differ by 15 and -16 feet, respectively, making it likely that their opposing effects offset each other statistically

using the combined data set. It is possible that the low-sensitivity conclusion for Lake Mead would change if each starting condition were independently evaluated[1].

November 2024 CRMMS-ESP

Percent of futures in which Lake Mead elevation stays above 975 feet in the percent of months specified by each column

Alternative	>60% of Months	>70% of Months	>80% of Months	>90% of Months	100% of Months
No Action	75%	71%	66%	60%	52%
Basic Coordination	90%	87%	85%	83%	80%
Enhanced Coordination	96%	95%	94%	91%	88%
Maximum Flexibility	97%	96%	95%	93%	90%
Supply Driven	96%	95%	93%	92%	91%
Lower Basin	98%	97%	96%	94%	92%

January 2026 CRMMS-ESP

Percent of futures in which Lake Mead elevation stays above 975 feet in the percent of months specified by each column

Alternative	>60% of Months	>70% of Months	>80% of Months	>90% of Months	100% of Months
No Action	67%	63%	59%	54%	46%
Basic Coordination	86%	83%	80%	78%	74%
Enhanced Coordination	95%	94%	92%	91%	88%
Maximum Flexibility	96%	95%	94%	91%	88%
Supply Driven	96%	95%	94%	93%	92%
Lower Basin	96%	95%	95%	93%	90%

Figure 6
Robustness Heat Map for the Objective of Keeping Lake Mead Above 975 feet (2027-2036)

Summary Statistics Visualization

The different initial reservoir conditions produced modest changes in the overall variability of each alternative, as shown in **Figure 7** by similarly sized boxes indicating relatively unchanged interquartile ranges. However, the upper and lower bounds of those interquartile ranges do change, producing a pronounced downward shift in the interquartile range for both Lake Powell and Lake Mead.

While the starting conditions exhibit nominal sensitivity in terms of the range of variability, they do produce a measurable sensitivity in the magnitude of the simulated reservoir elevations.

[1] Although this approach differs from the methods used to assess performance in the main analysis, separating the starting conditions used for Lake Mead reveals that at least one scenario exhibits some sensitivity to initial reservoir levels. The Mid and High runs display only minor declines in meeting the upper objective thresholds, whereas the Low starting-condition run shows a slight improvement in its ability to meet the Lake Mead objectives.

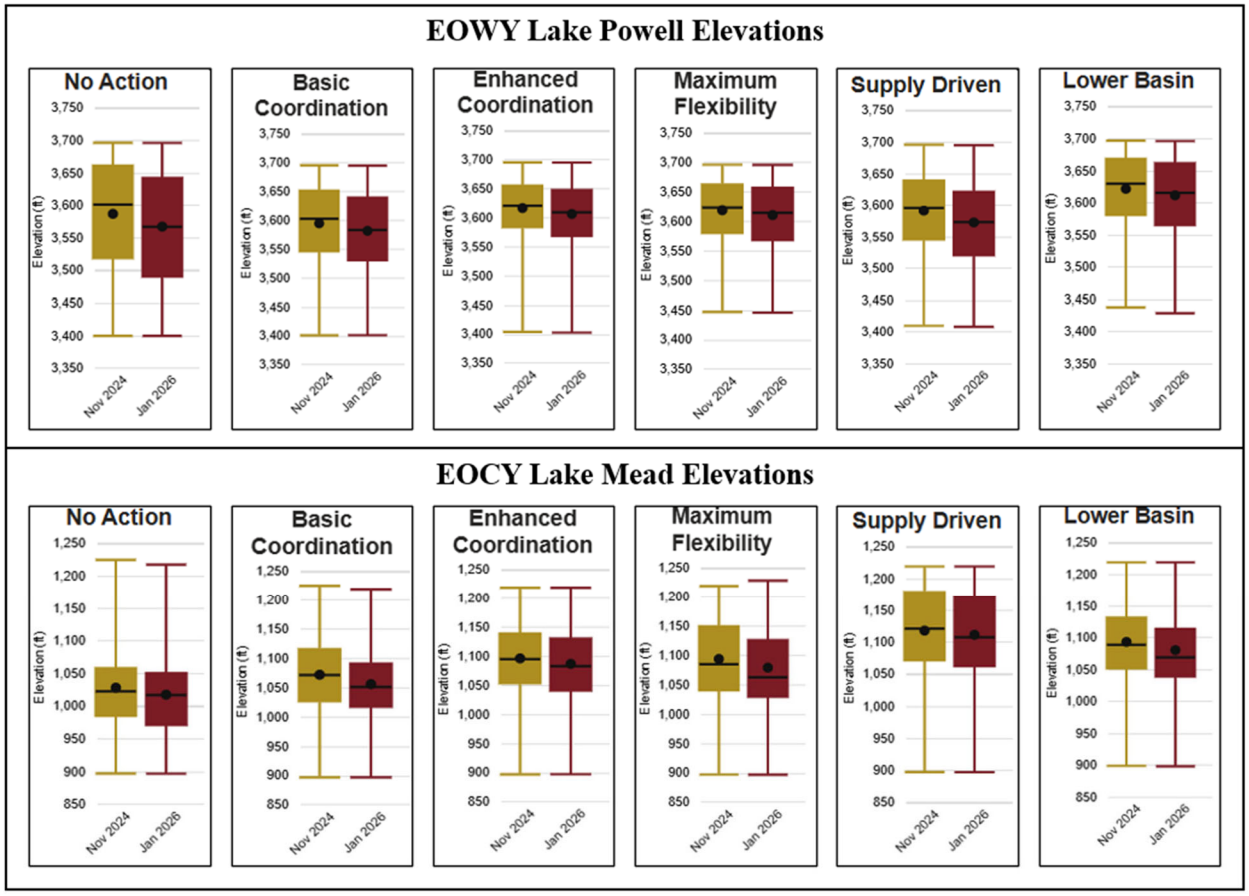

Figure 7
Summary Statistics of Lake Powell and Lake Mead Elevations (2027-2036)

Performance Assessment

The findings of this sensitivity analysis confirm the expected relationship between initial reservoir conditions and system performance, indicating that lower the starting conditions in the simulations used for this analysis result in reduced effectiveness of each alternative maintaining favorable system conditions.

Summary and Conclusions

The purpose of this analysis was to evaluate the Lower Basin Alternative through modeling and to assess its performance by comparing simulation results with the DEIS alternatives across a range of metrics. The analysis had two primary objectives: (1) determine if the Lower Basin is a viable alternative for meeting the stated purpose and need, and (2) evaluate the sensitivity of simulated reservoir elevations to system conditions used to initialize the model state.

Beginning with Reclamation's Supply Driven Alternative model developed for the DEIS, modifications were made to accurately represent and simulate the Lower Basin Alternative. Model simulations were then completed in both the DEIS models and the Lower Basin Alternative model using the same hydrologic inputs and initial reservoir conditions applied by Reclamation in the

DEIS alternatives analysis. Additional model runs were performed using the same input assumptions, but the reservoir initial conditions were defined using more recent forecasts of system conditions.

Evaluating the Lower Basin Alternative and the model's sensitivity to initial conditions followed a logical process for assessing model performance, using the same type of comparison metrics used by Reclamation for the DEIS and the Lower Basin States when assessing various operating-policy concepts. The analysis focused on the Lower Basin Alternative relied on model results from the full simulation period (2027-2060), whereas the sensitivity analysis targeted near-term conditions and used a truncated dataset representing the period from 2027-2036.

The key findings from the analysis were:

- The Lower Basin Alternative performs as well as, and in some cases better than, the DEIS alternatives in meeting the stated purpose and need. For that reason, it was prepared by the Lower Basin States for submission to Reclamation for inclusion as an alternative carried forward in the DEIS for the benefit of all stakeholders.
- The simulated near-term system conditions are highly sensitive to the forecast used to set the starting modeling conditions. What is considered favorable or less favorable operating conditions for Lake Powell and Lake Mead are largely shaped by the initial reservoir conditions used in the analysis. Relying on an outdated forecast to initialize the model does not accurately reflect reasonably foreseeable system conditions and understates the near-term resource risks associated with reservoir elevations.

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Today, Casey is the Resource Planning Supervisor for SNWA's Water Resources Department, where he oversees a team of resource analysts, contributes to near-term and long-range water planning, and continues to support key modeling and resource management efforts for SNWA's Colorado River initiatives.

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Attachment 1: Documentation of Modeling Analysis

Attachment 1 was prepared as a companion to the memo dated February 26, 2026, to offer additional details regarding the analysis that informed the memo's findings and conclusions.

1.0 Background

Current guidelines governing the operations of the Colorado River's two largest reservoirs (Lake Powell and Lake Mead) will expire at the end of 2026. For the past two decades, these guidelines have coordinated operating criteria for Lake Powell and Lake Mead, improving predictability in annual water deliveries and providing operational flexibility to conserve and store water within the system.

In June 2022, the U.S. Bureau of Reclamation (Reclamation) initiated the "Post-2026" process to develop successor Colorado River operational guidelines and strategies for Lake Powell and Lake Mead, in part, to support the sustainable management of the Colorado River system and its resources under a wide range of potential future conditions (Bureau of Reclamation, 2022). In accordance with National Environmental Protection Act (NEPA) implementing regulations, a Draft Environmental Impact Statement (DEIS) was published by Reclamation in the Federal Register on January 16, 2026 (Bureau of Reclamation, 2026a).

2.0 Draft EIS Alternatives

The DEIS considers five scenarios under which future operations may occur: a No Action Alternative, which would revert river management to pre-2007 operations, and four action alternatives (Bureau of Reclamation, 2026b). The four action alternatives include:

1. Basic Coordination Alternative
2. Enhanced Coordination Alternative
3. Maximum Operational Flexibility Alternative
4. Supply Driven Alternative

Each alternative consists of four operational components, (1) Lake Mead delivery guidelines, (2) coordination reservoir operations between Lake Powell and Lake Mead, (3) the storage and delivery of conserved water, and (4) additional activities in the Upper Basin upstream of Lake Powell.

3.0 Lower Basin States Alternative

The Lower Basin States (LBS) prepared a Post-2026 DEIS alternative, which was first submitted to Reclamation on March 6, 2024, and resubmitted with updated Lake Powell operations on January 13, 2025. The Lower Basin Alternative provided specific operational details for Lake Powell

water-year releases, basinwide annual water delivery reductions, and surplus guidelines, along with conceptual strategies for the storage and delivery of conserved water.

The LBS continued collaborating with Reclamation through summer 2024 to further refine aspects of the Lower Basin Alternative. A review of the DEIS model file indicates that several of these updated details were carried forward into certain DEIS alternatives, but the Lower Basin Alternative was not explicitly analyzed.

4.0 Converting DEIS Model to Lower Basin Alternative Model

The modeling analysis utilized the Colorado River Simulation System (CRSS) model files provided by Reclamation on January 26, 2026, along with updated model files provided on January 28, 2026. The modeling output represented as "DEIS models" in the accompanying Memorandum were produced through internal modeling conducted by SNWA staff using the raw CRSS model files provided by Reclamation. The following sections outline key assumptions in the DEIS model inputs that were retained or expanded upon for this analysis, as well as explanations of changes made to the original (raw) modeling framework.

4.1 Model Inputs

4.1.1 Initial Conditions

To replicate the modeling data used in the DEIS analysis, The raw DEIS models were initialized using end-of-calendar year (EOCY) 2026 forecasts of reservoir conditions (storage, elevation and releases) for the Colorado River system (Reservoir Conditions) from the November 2024 Colorado River Mid-term Modeling System (CRMMS) Ensemble Streamflow Prediction (ESP) model (Bureau of Reclamation, 2026c). A supplemental set of simulations was also performed using the forecasted EOCY 2026 Reservoir Conditions from the January 2026 CRMMS-ESP model for comparison purposes.

The CRMMS-ESP model simulates Reservoir Conditions using 33 unique sequences of inflow hydrology forecasts as input (Bureau of Reclamation, 2024). The inflow hydrology forecasts, commonly known as the Ensemble Streamflow Prediction (ESP), is a probabilistic streamflow forecast product of the Colorado Basin River Forecast Center (CBRFC) (Bureau of Reclamation, 2024). The first three hydrology sequences represent what the CBRFC calls their Minimum Probable, Most Probable, and Maximum Probable inflow forecasts, and the following 30 hydrology sequences are inflow forecasts derived from temperature and precipitation observations from the previous 30 years (Bureau of Reclamation, 2024). The CRMMS-ESP model provides reservoir conditions for 33 model simulations often referred to as "Traces". A single CRMMS-ESP trace contains model results for 60 timesteps (months) where the first simulated month corresponds to the CRMMS model name (i.e., November 2024).

Three simulations of Reservoir Conditions (Traces) from the November 2024 CRMMS-ESP model were selected by Reclamation to represent the low, mid, and high initial CRSS model states

of reservoir elevations at Lake Powell and Lake Mead (Bureau of Reclamation, 2026c). There was no explanation provided by Reclamation in the DEIS of the reasoning behind selecting the initial reservoir conditions used in their analysis. Accordingly, the initial reservoir conditions selected for the supplemental model runs used the minimum, most, and maximum probable traces from the January 2026 CRMMS-ESP model. **Table 1** presents the initialized model state based on forecasted end-of-calendar-year 2026 reservoir elevations for Lake Powell and Lake Mead from the November 2024 and January 2026 CRMMS-ESP studies, including the specific CRMMS-ESP model trace from which the elevations were obtained.

Table 1
Forecasted EOCY 2026 Reservoir Elevations for Lake Powell and Lake Mead

Initialized Model State	Forecasted EOCY 2026 Reservoir Elevation					
	Nov 2024 CRMMS-ESP			Jan 2026 CRMMS-ESP		
	Trace	Lake Powell	Lake Mead	Trace	Lake Powell	Lake Mead
Low	14	3,511	1,038	2	3,499	1,053
Mid	12	3,574	1,063	3	3,514	1,060
High	6	3,629	1,079	1	3,566	1,063

4.1.2 Hydrology

Like the CRMMS-ESP model, the CRSS model is a probabilistic model that uses sequences of inflow (Traces) to simulate Colorado River reservoir conditions (Bureau of Reclamation, 2024). The CRSS model has 29 points of intervening inflow, most of which are in the Upper Basin. The hydrology used in CRSS are representations of pre-development streamflow conditions for each point of intervening inflow (Natural Flow) (Bureau of Reclamation, 2024).

For their Draft EIS modeling analysis, Reclamation used a Decision Making under Deep Uncertainty (DMDU) approach to select an ensemble of hydrologic traces that captured a wide range of potential hydrologic futures (Bureau of Reclamation, 2026d). This DMDU ensemble consists of 400 traces from five different ensembles (Bureau of Reclamation, 2026e):

- CMIP5-LOCA (Trace 1-64): Climate change scenario using LOCA statistical downscaling and 32 projections each from both RCP 4.5 and RCP 8.5. Disaggregation to nodes using the VIC method (64 traces).
- Paleo Drought Resampled (Trace 65-114): Random sampling of the paleo drought period (1576-1600), reconstructed to create 100 traces, and subsampled to select 50 traces to supplement missing patterns of the other hydrology ensembles (50 traces).
- Stress Test (Trace 115-150): Index Sequential Method sampling of direct natural flow record (1988-2023); 2021-2023 provisional data (36 traces).
- CMIP3 Paleo Conditioned (Trace 151-300): Nonparametric paleo conditioning (NPC) and wet-dry sequencing of a climate change scenario, subsampled to select 150 traces to supplement missing patterns of the other hydrology ensembles (150 traces).

- Drying with Variability (Trace 301-400): Nonparametric paleo conditioning (NPC) and wet-dry sequencing of the direct natural flow record, maintaining climate variability and a warming trend in later years, developed by Utah State University (100 traces).

The analysis of the DEIS alternatives used this same 400-trace ensemble used by Reclamation for the DEIS under both sets of initial conditions. It should be noted that prior to June 2025, Reclamation used a similar, but slightly different, 400-trace ensemble. The final ensemble used in the DEIS included an updated CMIP5 ensemble that used the VIC statistical method instead of the kNN statistical method. The final ensemble also used an updated Stress Test ensemble that included three additional years (traces) that were not previously available. Because of the addition of three traces to the Stress Test ensemble, the CMIP3-NPC ensemble was reduced from 153 traces to 150 traces. The CMIP3-NPC and Paleo Drought ensemble were also resampled to fill in the statistical space after updates to the Stress Test and CMIP5 ensembles. While these updates do not create any issues with the DEIS modeling, it is important to note this difference when comparing the results of the official DEIS models to the results of model runs performed by other basin states or Reclamation prior to June 2025.

4.2 Changes to Modeling Framework

Lake Powell releases, water delivery reductions, and the storage and delivery of conserved water were the main aspects of the Lower Basin Alternative that informed modifications to a DEIS model framework. The Supply Driven Alternative model was selected as the most appropriate model framework to incorporate the Lower Basin Alternative details.

4.2.1 Combined Storage

The Lower Basin Alternative relied on a system-contents framework as the primary method for determining reservoir operating conditions. The Lower Basin Alternative model is designed to use the observed Oct 1st combined contents of Lake Powell, Flaming Gorge Reservoir, Navajo Lake, and Blue Mesa Reservoir (CRSP Reservoirs) for determining the water-year release from Lake Powell. Additionally, the observed Aug 1st combined contents of the CRSP Reservoirs, Lake Mead minus the full volume of conserved water stored in the reservoir (Operationally Neutral), Lake Mohave, and Lake Havasu are used for determining the calendar year water-supply reductions.

A new rule was added to the Lower Basin Alternative model called "**Set Combined Storage**", which replicates a similar rule from the Maximum Flexibilities model but incorporates the operationally neutral logic used in the Supply Driven model. Additionally, the CRSP capacity block of code was moved into a separate rule called "**Set CRSP Combined Storage**", which was set to execute at the beginning of each water year. The rules write to four slots **(Table 2)** tracking the total system contents used for reductions and the total CRSP contents used for the Lake Powell release determination.

Table 2
Series Slots for Total Systems Contents and CRSP Contents Determination Tracking

Series Slot Name	Description
LDS.SystemStoragePercent	Contains the percent of total system contents used in reduction determinations.
LDS.SystemStorageVolume	Contains the volume of system contents used in reduction determinations.
LDS.CRSPStoragePercent	Contains the percent of CRSP contents used in Powell release determinations.
LDS.CRSPStorageVolume	Contains the volume of CRSP contents used in Powell release determinations.

4.2.2 Lake Powell Release

The Lower Basin Alternative was designed to use the Oct 1st total system contents of the CRSP Reservoirs with water year releases ranging from 5.50 to 11.00 million acre-feet (maf) with the option to increase or decrease the annual release by one million acre-ft given Lake Mead elevations when the CRSP Reservoirs are operating between the 40 to 80 percent capacity range. To their credit, Reclamation designed their models in a way that allowed alternative Lake Powell release concepts to be integrated into the native framework with relative ease. Implementing the Lake Powell release approach from the Lower Basin Alternative required adding a new table slot arranging the CRSP Reservoir capacity intervals with their associated release intervals and modifying the **PowllRelforCurrentMonth** function and a few of its dependent functions.

A new table slot called **PowellReleaseCurve_LDS** was added to the Lower Basin Alternative **(Table 3)**.

Table 3
PowellReleaseCurve_LDS Table Slot

Release Tier	CRSP Capacity (percent)	WY Release (acre-ft)
1	0	5,500,000
2	30	5,500,000
3	40	7,000,000
4	80	8,500,000
4	100	11,000,000

Global functions were modified and added to the Lower Basin Alternative model as described below:

1. **PowllRelforCurrentMonth** Function: Changes to the called dependent functions, and no changes were made to the general function structure.
2. **PowellRelVolRemaining_LDS** Function: Changes to the called dependent function, and no changes were made to the general function structure. A dependency of the **PowllRelforCurrentMonth** function.
3. **GetPowellRelease_LDS** Function: A complete redesign of the same function used in the Supply Driven model. A dependency of the **PowllRelforCurrentMonth**, and the **PowellRelVolRemaining_LDS** functions. Changes included:
    a. Adding two new boolean global functions to the LBS model:
        i. **UpwardAdjustPowellRelease** Boolean Function: Returns TRUE if the Oct 1 CRSP Reservoirs are operating between 40 and 80 percent and Lake Mead's Oct 1 elevation is less than 1,000-ft.
        ii. **DownwardAdjustPowellRelease** Boolean Function: Returns TRUE if the Oct 1 CRSP Reservoirs are operating between 40 and 80 percent and Lake Mead's Oct 1 elevation is greater than 1,100-ft.
    b. Add a variable called **UnadjustedRelease** that will use linear interpolation to relate the Oct 1st CRSP Reservoir capacity with a water year release values listed in the **PowellReleaseCurve_LDS** table.
    c. The function will return one of three output options.
        1. If **UpwardAdjustPowell** is TRUE, then return the **UnadjustedRelease** plus one million acre-ft.
        2. If **DownwardAdjustPowell** is TRUE, then return the **UnadjustedRelease** minus one million acre-ft**.**
        3. If both the **UpwardAdjustPowell** and **DownwardAdjustPowell** are FALSE, then return the **UnadjustedRelease** value.
    d. This function is constrained between 5.50 and 11.00 million acre-ft.

All other Supply Driven Alternative rules related to Lake Powell releases were left unchanged. This includes all flood-control and bypass-release rules, as well as the carryover and gap-water rules. However, gap-water operations were disabled by setting the ***Deficit_MagicWater_OnOff*** slot to 0.00. The carryover rule writes to a slot that is not referenced by the Lake Powell release function modified for the Lower Basin Alternative, so its output is not utilized in the Lower Basin Alternative.

4.2.3 UIU Releases

While the Lower Basin Alternative did not specify how the Upper Initial Units (UIU) should be operated by Reclamation to mitigate declining Lake Powell elevations, it is assumed that Reclamation would manage upstream reservoirs in a manner to protect critical infrastructure at Glen Canyon Dam. Accordingly, it was assumed the UIU operations used for the Supply Driven Alternative model would also be incorporated into the Lower Basin Alternative model.

4.2.4 Water-Supply Reductions

The Supply Driven Alternative model was coded to accept elevation-based reductions; however the Lower Basin Alternative requires effective system contents as a percentage of total system contents, which required substantial changes to the Supply Driven Alternative model.

1. **Table 4** below lists the table slots that were modified to switch from an elevation-based reduction trigger to a system content-based reduction trigger.

Table 4
Modified Table Slots

Table Slot Name	Description
Shortage.TotalShortage	Contains the total basinwide shortage volume for each system content-based reduction trigger.
Shortage.ArizonaShortage	Contains the Arizona shortage volume for each system content-based reduction trigger.
Shortage.CaliforniaShortage	Contains the California shortage volume for each system content-based reduction trigger.
Shortage.NevadaShortage	Contains the Nevada shortage volume for each system content-based reduction trigger.
Shortage.MexicoShortage	Contains the Mexico shortage volume for each system content-based reduction trigger.
P26_Mead_ConservationBank. AZ_CreationSchedule	Contains the AZ conservation creation volumes for each system content-based reduction trigger
P26_Mead_ConservationBank. MX_CreationSchedule	Contains the MX conservation creation volumes for each system content-based reduction trigger

2. The ***GetShortageTriggerValue*** function was modified by adding an additional accepted trigger value of 2.0, which assured all the shortage rules were using the percent of system contents when running the Lower Basin Alternative model. (Figure 2)
3. The **Shortage.TriggerMetric** and **Shortage.TriggerMetricMexico** slots value were set to 2.00

The **Calculate Lower Basin Shortage** rule has the primary function of determining the amount of shortage required when given the simulated reservoir conditions. In its original configuration, the rule was designed to assign the full shortage volume to Lower Basin water users. The Lower Basin Alternative is designed to assign the first 1.5 maf to Lower Basin water users and evenly split the remaining reduction volume between the Upper and Lower Basin. While there were some changes needed to accommodate the Lower Basin Alternative specifications, the original function developed by Reclamation to determine the annual shortage contribution (Shortage Function) and the series slot tracking Lower Basin reductions that were included as part of the Supply Driven

Alternative model were retained in their original form. Only the data written to the series slot changed as described below:

1. A new annual series slot was added to the LBS data object called "**UBShortage**" for the purpose of tracking annual Upper Basin reductions.
2. Two variables were added to the **Calculate Lower Basin Shortage** rule:
    a. **LBReduction**: Will return the minimum of 1.5 maf and the Shortage Function output.
    b. **BasinwideReduction**: Will return the maximum between 0.00 acre-ft and Shortage Function output less 1.5 maf.
3. One half of the **BasinwideReduction** plus the **LBReduction** were assigned to the original series slot Reclamation added to the model for the purpose of tracking annual Lower Basin reductions. Writing the output to the original slot used in the Supply Driven model allowed for the original rules distributing the Lower Basin shortage to remain unchanged.
4. One half of the **BasinwideReduction** was assigned to the new **UBShortage** series slot added in step 1. The distribution of the Upper Basin shortage will be described later.

There are six methods for distributing shortages in the Supply Driven Alternative model. The Lower Basin Alternative did not specify a preference between the pro rata or priority-based distribution methods, but it did specify that the basinwide reductions, reductions that are greater than 1.5 maf, should be equally split between the Upper and Lower Basin States. The **Calculate User Shortage_ProRata** rule was selected as the preferred method for distributing shortages for this analysis. The shortage distribution rules were designed to accept the output from the **Calculate Lower Basin Shortage** rules, which remained in its original form so there were no changes needed to the selected shortage distribution rule.

The Upper Basin shortages were managed in a new reach object called **BasinWideReductions** and a new rule called **Set Gains for UB Basinwide Reductions**.

1. The **BasinWideReductions** reach object was added to the Lowr Basin Alternative model workspace just above Lake Powell.
    a. No Local Inflow, Solve Inflow or Outflow was the Local Inflow and Solution Direction method selected for the new reach object.
    b. A new element was added to the **SanJuanPowell** aggregated reach object called **BasinWideReductions**.
    c. The reach object outflow slot was linked to the local inflow slot of the new element add to the **BasinWideReductions** aggregated reach.
2. A new rule was added to the Lower Basin Alternative ruleset called **Set Gains for UB Basinwide Reductions** with three objectives:
    a. Evenly distributed the annual Upper Basin reduction volume to each month of the year.
    b. converted the monthly volume (acre-ft) to a monthly flow (acre-ft/month).

c. Assigned the monthly flow to the inflow slot of the **BasinWideReductions** reach object.

4.2.5 Storage and Delivery of Conserved Water

The Supply Driven Alternative model included conservation pools for both the Upper Basin and Lower Basin. The Lower Basin Alternative included provisions for managing existing Intentionally Created Surplus (ICS) as well as a Post-2026 Conservation, Augmentation and Storage Conservation Program (Post-2026 Program) for the Lower Basin but did not include any provisions for a similar Upper Basin program.

Details of Lower Basin program included as part of the original Lower Basin Alternative proposal in March 2024 were further refined through discussions with Reclamation through the summer of 2025. Many of those refinements appear to have been incorporated into the Supply Driven Alternative. Therefore, it was assumed that the Lower Basin Alternative modeling rules for storing and delivering Lower Basin conservation water would remain consistent with their original form in the Supply Driven Alternative model.

Because the original Lower Basin Alternative did not include an Upper Basin conservation-storage pool, it was assumed that any Supply Driven rules associated with creating or supplying an Upper Basin storage pool should be deactivated. This was accomplished by setting the PowellBank_OnOff slot to 0.00.

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Nevada Proposed Approach to Short- and Long-Term Operations

March 2, 2026

Operation of the Upper Initial Units of the Colorado River Storage Project Act (UIU)

The operation of the upper initial units should be the first line of defense in protecting Lake Powell from dropping below critical elevations (UIU augmented releases). Releases from the initial units between May 1, 2026 and April 30, 2027 (UIU Year 1) should be at least 500 thousand acre-feet (KAF) greater than the scheduled releases. Target elevations should be maintained lower to ensure the water released is not recovered until Lake Powell reaches elevation 3,540. Releases for May 1, 2027 to April 30, 2028 (UIU Year 2) should be dependent upon Lake Powell projected elevations and should Lake Powell be projected to fall below elevation 3,515 during the UIU Year 2, a minimum of 500 kaf should be released with a lower target elevation maintained to ensure the water released is not recovered until Lake Powell reaches elevation 3,540. This logic for UIU year 2 should be applied in each successive year of operations under the proposed approach.

Release from Lake Powell to Lake Mead

For the purposes of this section, all UIU augmented releases should be modeled as described above with no consideration of "operational neutrality" when making a water year release determination. UIU releases should occur before modifications that reduce the Lake Powell release volume are made. The release for water year 2026 should be maintained at 6.0 million acre feet (MAF) in order to protect critical elevations in Lake Powell. In the event Lake Powell is projected to end water year 2026 above elevation 3,530, additional water should be released through the end of the water year until either 8.5 MAF has been released or Lake Powell is projected to end water year 2026 at or below 3,530, whichever condition is achieved first will dictate the ultimate release volume. For water year 2027, the scheduled release from Lake Powell will be 8.0 MAF if Lake Powell is at or above 3,540 on October 1, 2026. If Lake Powell is below 3,540 on October 1, 2026, the scheduled release from Lake Powell will be 7.0 MAF. Under either starting condition, the release may be adjusted down to 6.0 MAF if Reclamation's Minimum Probable forecast of hydrologic conditions and UIU augmented releases are insufficient to keep Lake Powell from falling below elevation 3,515 during the water year. If Lake Powell is projected to end the water year above 3,565, then one half of the difference in volume from the projected end of water year storage and Lake Powell's storage at 3,565 will be added to the release

volume. This process should be iterative from October to April with the final determination for the water year based on the Most Probable projections in the April 24-month study.

For subsequent water years, the water year 2027 release criteria will be the basis for releases.

Lower Basin Reductions

Reclamation should consult with the Lower Basin states to implement reductions of 1.25 MAF in 2027 and 2028. For US reductions, these reductions should be satisfied with reduced water orders and/or extinguishing a like quantity of ICS credits for calendar year 2027 and 2028. After calendar year 2028, additional reductions may be necessary along with refinements of criteria for using ICS credits to satisfy reductions. 1.25 MAF of reductions should remain a normal operating condition for the Lower Basin until system conditions have meaningfully improved. Deference should be given to consensus based Lower Basin approvals should such modifications be necessary.

The U.S. Department of State should work with Reclamation, the Basin States, and Mexico to provide parity in reductions and methods for satisfying reductions consistent with US users.

Intentionally Created Surplus (ICS) Rules

ICS rules should be extended for the length of the record of decision. This includes annual limits on creation, delivery, and added time to withdraw ICS. The ICS account of each state should be increased by 300 KAF for the first two years of implementation to allow for creation of additional ICS.

Additional Actions

Reclamation should draft rules for the exchange of augmented water among existing Section 5 contractors. Water that is not withdrawn by the receiving contractor in the year the exchange occurs should be eligible to be stored in an ICS account under the rules of the ICS program. The evaporation and system assessments will occur if the exchanged water is stored as ICS, but do not occur if delivery of the exchange occurs in same calendar year.

Reclamation should study modifications to the Navajo Indian Irrigation Project Diversion at Navajo Reservoir to allow Navajo Reservoir's operating elevation to fluctuate and release additional water downstream as originally intended in its enacting legislation.

Reclamation should evaluate, and as appropriate, seek new compliance to release additional water from the UIU when operating for their authorized purposes including

protecting downstream infrastructure and meeting Compact requirements. This is not to imply that existing compliance is insufficient to achieve these goals; rather, the proposed approach is intended to be more transparent about the frequency and proliferation of such operations as the records of decision were all adopted at times when neither complying with Compact flows nor protecting downstream infrastructure was a paramount operational objective.

Decision Making Process for 2028 and beyond

Recently, hydrologic risk is at an all-time high. Navigating a long-term agreement has been complicated by overcoming challenges associated with near-term risk and uncertainty. After the operations above are implemented for WY 2026-2028 and CY 2027-2028, Reclamation should adopt a decision-making process with a set of limits on the determination of each of the factors above. This decision-making process can function annually to provide input into the AOP process, and should consensus between the Basin States be reached, the bounds are broad enough to adopt operating rules that still function under this NEPA compliance.

- Annual Process
    - Beginning no later than August 15, 2027 (and August 15 of each year thereafter), the Secretary of the Interior (SOI) or his designee will convene the Basin States Principals and technical staff. Each Basin is allowed 15 representatives inclusive of their Principal in consultation meetings.
    - Annual consultations will review hydrology and all water use, conservation, voluntary actions, etc., of each basin.
    - If the Seven States make, and the SOI implements, a consensus recommendation on the major elements listed above for the upcoming water-year, they agree not to pursue litigation during the water-year.
    - The goal of the annual consultation process is for the Seven States to make a consensus recommendation on operations for the water year. In the absence of consensus, each Basin and/or state may submit an operational recommendation to the SOI for his consideration. Such recommendations are due in writing to the SOI no later than September 15. The SOI will make relevant determinations by October 1.
    - The SOI must consider existing law, water use in both basins, and verifiable water conservation activities in both basins when making a decision that is not supported by a consensus proposal or differs from a consensus proposal.

- Mid-year Consultation Process
    - Beginning no later than March 15, 2028 (and March 15 of each year thereafter), the SOI or his designee will convene the Basin States Principals and technical staff. Each Basin is allowed 15 representatives inclusive of their Principal in consultation meetings.
    - Mid-year consultations will review hydrology projections to determine if the release from Lake Powell or the UIU should be modified. Mid-year adjustments may be made to the release volume.
    - If mid-year adjustments are determined to be necessary by the SOI, they are limited to reducing the release volume to protect critical infrastructure until such infrastructure is modified to handle low storage operations, or to increase the release to comply with the Law of the River.
    - The goal of the mid-year consultation process is for the Seven States to make a consensus recommendation on a mid-year adjustment. In the absence of consensus, each Basin and/or state may submit an operational recommendation to the SOI for his consideration. Such recommendations are due in writing to the SOI no later than April 1. The SOI will make relevant determinations by April 15.

The SOI must consider existing law, water use in both basins, and water conservation activities in both basins when making a decision that is not supported by a consensus proposal or differs from a consensus proposal. Nevada proposes inclusion of the following elements for inclusion in the approach outlined above:

UIU Augmented Releases

UIU releases should occur before modifications that reduce the Lake Powell release volume are made.

Releases from Lake Powell to Lake Mead

Releases should be between 6.0 and 10.0 MAF annually, with operational flexibility to modify the release determination mid-year within these constraints.

Lower Basin Reductions

Lower Basin reductions will be between 0 and 2.5 MAF. Reductions above 1.25 MAF will be made as needed with strong deference to the agreements among the Lower Basin states on the timing and quantity of reductions necessary above 1.25 MAF.

Intentionally Created Surplus

An additional 5 MAF of ICS space will be analyzed and made available to Lower Basin States and contractors with strong deference to agreements among the Lower Basin States on the timing and availability of additional storage space.

Exhibits to State of Nevada's Comments
on the U.S. Bureau of Reclamation Draft Environmental Impact Statement
Post-2026 Colorado River Reservoir Operations
(March 2, 2026)

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Exhibit Number	Title/Name	Author/Institution	Date
8.	Agricultural Water Conservation and Efficiency Potential in California	National Resources Defense Council and Pacific Institute	June 2014
9.	The Economic Importance of the Colorado River to the Basin Region	L. William Seidman Research Institute and W.P. Carey School of Business, Arizona State University	Dec. 18, 2014
10.	Statement of John J. Entsminger, General Manager, Southern Nevada Water Authority, before the U.S. Senate Committee on Energy and Natural Resources	Hearing Before the Committee on Energy and Natural Resources, United States Senate, One Hundred Seventeenth Congress, Second Session, S. Hrg. 117-468	Jun. 14, 2022
11.	Letter from John Entsminger (SNWA) and Eric Witkoski (CRCNV) to Tanya Trujillo	John J. Entsminger, Governor's Representative State of Nevada and General Manager, Southern Nevada Water Authority; Eric P. Witkoski, Executive Director, Colorado River Commission of Nevada	Dec. 20, 2022
12.	Press Release regarding "Seven Basin states agree on analyzing consensus-based approach proposed by the Lower Basin"	U.S. Department of the Interior	May 22, 2023
13.	Water Districts Letter to Bureau of Reclamation	Southern Nevada Water Authority, Central Arizona Water Conservation District, and the Metropolitan Water District of Southern California	Mar. 6, 2024
14.	Lower Basin States Alternatives Letter to Bureau of Reclamation	The Colorado River Basin States Representatives of Arizona, California, and Nevada	Mar. 6, 2024
15.	Technical Decision Memorandum: Establishment of Interim Operating Guidance for Glen Canyon Dam during Low Reservoir Levels at Lake Powell	Richard LaFond, Director, Technical Service Center, U. S. Department of the Interior, Bureau of Reclamation	Mar. 26, 2024

Exhibit Number	Title/Name	Author/Institution	Date
16.	Statement of Deputy Commissioner David Palumbo, on H.R. 7776, the Help Hoover Dam Act, before the Water, Wildlife, and Fisheries Subcommittee of the U.S. House Committee on Natural Resources	David Palumbo, Deputy Commissioner, U.S. Bureau of Reclamation	May 22, 2024
17.	Upper Basin States Letter to Reclamation regarding "Reclamation's Consideration of 602(a) Storage in the No Action Alternative"	Rebecca Mitchell, Governor's Representative, State of Colorado; Estevan Lopez, Governor's Representative, State of New Mexico; Gene Shawcroft, Governor's Representative, State of Utah; and Brandon Gebhart, Governor's Representative, State of Wyoming	Jun. 11, 2024
18.	Lower Basin Letter to Reclamation regarding "Upper Division States' June 11, 2024 Letter Regarding 602(a) Storage Considerations in the No-Action Alternative"	Thomas Buschatzke, Governor's Representative, State of Arizona; J.B. Hamby, Governor's Representative, State of California; and John J. Entsminger, Governor's Representative, State of Nevada	Jun. 25, 2024
19.	Reclamation Press Release, "Glen Canyon Dam begins relining project as part of the President's Investing in America agenda"	U.S. Bureau of Reclamation	Sep. 3, 2024
20.	Correspondence from JB Hamby, Colorado River Commissioner for California to Reclamation	JB Hamby, Chairman, Colorado River Board of California, Colorado River Commissioner, State of California	Dec. 24, 2024
21.	Correspondence from Tom Buschatzke, Director, Arizona Department of Water Resources, to Carly Jerla, U.S. Bureau of Reclamation	Thomas Buschatzke, Director of the Arizona Department of Water Resources	Jan. 13, 2025

Exhibit Number	Title/Name	Author/Institution	Date
22.	Letter from Lower Basin States to Doug Burgum, Secretary of the Interior, regarding "Congratulations and Perspectives from the Lower Basin States on the Colorado River Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead"	The Colorado River Basin States Representatives of Arizona, California, and Nevada	Feb. 13, 2025
23.	Bureau of Reclamation 2024 Decree Accounting Report	Bureau of Reclamation, U.S. Department of the Interior	May, 2025
24.	Southern Nevada Water Authority Operating and Capital Budget 2025	Southern Nevada Water Authority	Jun 30, 2025
25.	Analysis of Colorado River Basin Storage Suggests Need For Immediate Action	Jack Schmidt, Anne Castle, John Fleck, Eric Kuhn, Kathryn Sorensen, and Katherine Tara	Sep. 11, 2025
26.	2026 Water Resource Plan	Southern Nevada Water Authority	2025
27.	24-Month Study Inflow Scenarios	Bureau of Reclamation, U.S. Department of the Interior	Jan. 16, 2026
28.	February 2026 Most Probable 24-Month Study	Bureau of Reclamation U.S. Department of the Interior	Feb. 13, 2026
29.	These Four States Are in Denial Over a Looming Water Crisis	Sammy Roth, The New York Times	Feb. 2, 2026
30.	2026-02-23 FOIA Request to Bureau of Reclamation	Holland & Hart LLP on behalf of Southern Nevada Water Authority	Feb. 23, 2026
31.	What We're Doing to Conserve	Southern Nevada Water Authority	Undated

State of Nevada's Comments on the Colorado River Post-2026 Operational Guidelines and Strategies for Lake Powell and Lake Mead Draft Environmental Impact Statement

Due to file size restrictions, Exhibits 1-31 have not been uploaded to the Bureau of Reclamation webpage. These exhibits are available upon request. Please contact the project email below for any requests.

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